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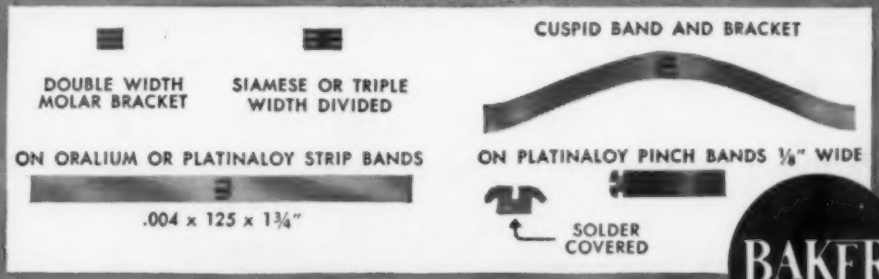
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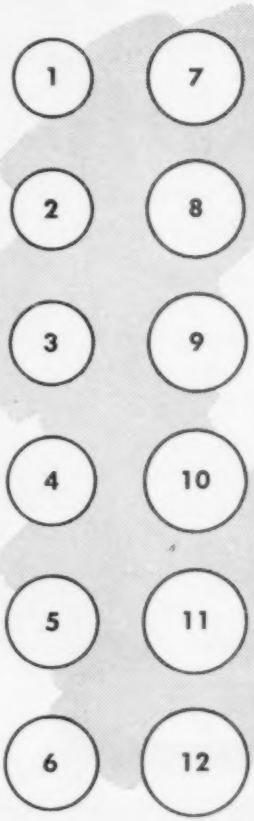

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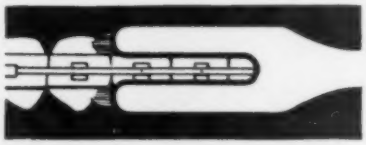

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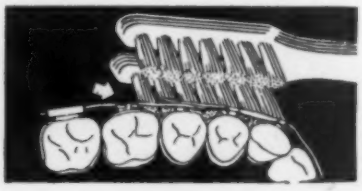

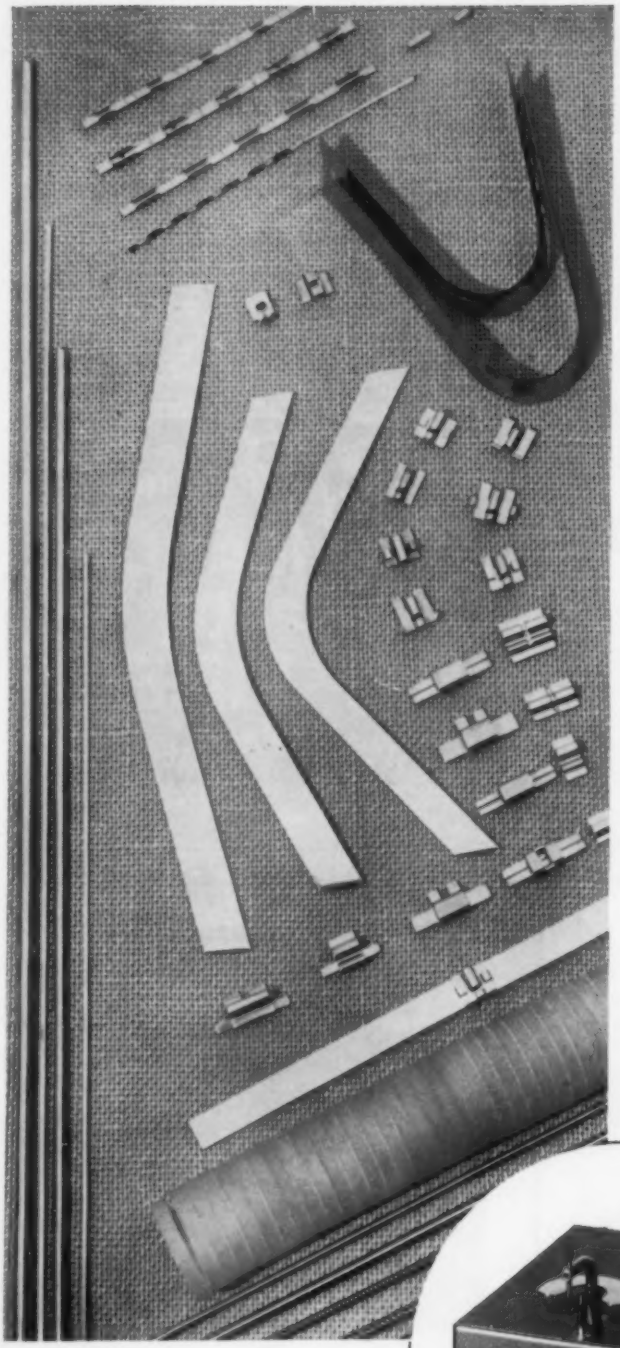

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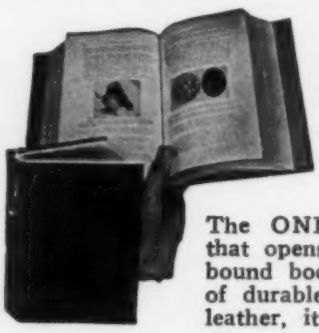

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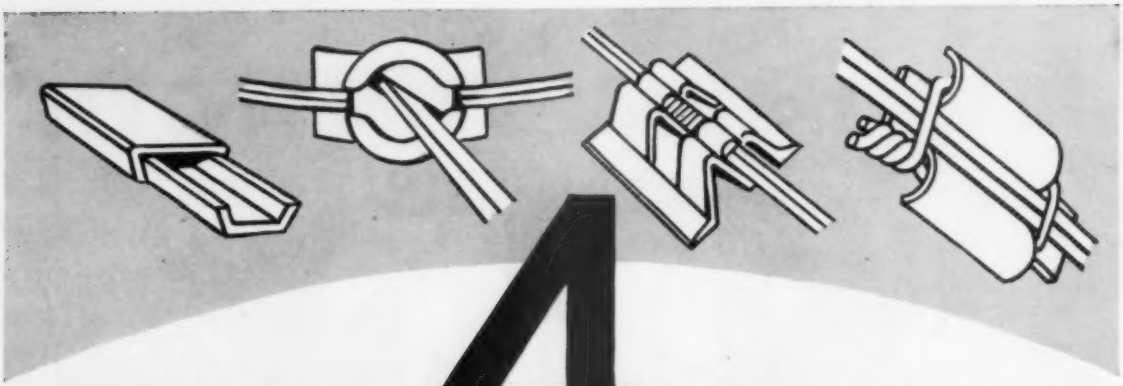

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American Journal
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VOL. 39 JANUARY, 1953 NO. 1

Symposium

INTRODUCTION

ROBERT E. MOYERS, D.D.S., M.S., PH.D., TORONTO, ONTARIO, CANADA

DR. DEVRIES' letter inviting the department to prepare this symposium contained the following thoughts.

"For a long time I have felt that the time is rapidly approaching when orthodontics should begin to try to codify much of its thinking and establish some principles of practice. So much of our thinking has been mere personal opinion developed from successfully treating cases in practice. The practice of orthodontics has developed around certain major mechanical systems and even tooth movement has almost been taken for granted. All of this does not do credit to a service as splendid as ours. There should be at least a few basic principles of practice which pertain consistently and if some of these could be stated it would be helpful for young men who are starting in practice, to say nothing of the educators. Certain procedures are basic in surgery and certainly there must be some in orthodontics.

"The fetish of blind reliance in any certain appliance to accomplish all tooth movements demanded of it is one of the great handicaps to real thinking in our profession. Let us frankly and with no bias scientifically analyze just what all appliances are—they are mechanical tools to accomplish what? Read the literature and you have your answer! Everybody can't be right, Bob, and after all, tooth movements have their limitations also. Queerly enough, I sort of resent it when some clinician says, 'so after this and that, I move the buccal segments distally with the X Y Z attachment and look at the result.' For me I still don't know whether you can actually move bodily maxillary and mandibular molars or whether you tip them. Maybe we can do both, but I would personally like to be able to say that it has been *scientifically established* that such movements can successfully be accomplished or not. To establish any such fact is to establish a principle of practice.

"Over a year ago I resolved that I would at least try to develop the program for my year as president along some such line. If I

From the Department of Orthodontics, Faculty of Dentistry, University of Toronto.

could only just start it so that each year we could develop more and more basic thoughts, it would be fine. That would be a real objective for our A.A. of O. to try to achieve."

The purpose of these three papers is to:

a. Résumé and evaluate the evidence to date in each area.
b. Enunciate the basic principles involved.
c. Attempt to point the direction future studies and practice should take if we are to reach a better understanding of the problem.

Each paper has been prepared by a team from the Department of Orthodontics, University of Toronto, Faculty of Dentistry. So far as possible they have reviewed the literature, analyzed the statistics, accepted only well-proved facts, and attempted to give them integrated meaning. We strive to make ours a department of orthodontics, not a department of the twin wire or edgewise mechanisms, nor a department of cephalometrics nor any other single method of treatment or diagnosis. Care was taken to have each team represent several attitudes. We are not interested in espousing nor defending any particular method. Our assigned task was to search for principles so basic and fundamental as to underly all types of orthodontic therapy.

These papers represent trends in orthodontic thinking and the basic concepts which prompted those trends. With one or two exceptions, no new data are presented, rather a codification and condensation of many men's work. The conclusions, therefore, do not necessarily represent University of Toronto thinking, but rather that of the men in the profession whose writings are best documented.

The first paper is titled "The Morphology and Physiology of Distoclusion. A Summary of Our Present Knowledge." After the men started working on this paper they changed their ideas about terminology. They did not like "Class II" because it was a little too concise; nor did they like "distoclusion." They preferred "postnormal occlusion," but the fact remains they were stuck with the title, "Morphology and Physiology of Distoclusion."

The literature in this field is of two kinds:

1. Subjective descriptions.
2. Anthropometric research, including, of course, the vast amount of cephalometric research.

Many theses which are unpublished, and thus not read by the committee, may alter conclusions we have reached, for these papers report on only the literature that is printed and published.

The team selected to write this paper consisted of four men: An orthodontist of experience, who has used cephalometrics for many years in his office; a statistician, who is also a dentist; and two other staff members from the Department of Orthodontics.

THE MORPHOLOGY AND PHYSIOLOGY OF DISTOCLUSION

A Summary of Our Present Knowledge

G. V. Fisk, D.D.S., M. R. Culbert, D.D.S., R. M. Grainger, D.D.S., M.S., B. Hemrend, D.D.S., and R. Moyers, D.D.S., M.S., Ph.D.,
Toronto, Ontario, Canada

PROBABLY more has been written about Angle's Class II malocclusion than anything else in orthodontics. Our lore on this subject abounds with clinical dogma, with sacred tradition, and even with myth. Research reports on Class II are abundant also, and now make up a fair proportion of the literature. Yet with all that has been done and recorded, we are still a long way from universal agreement on the actual morphology of this abnormality.

It is the purpose of this paper to scrutinize the research, evaluate and interpret the findings, summarize the known facts, explore the areas of disagreement, and propose further studies to reveal factors at present unknown. Thus we hope that our concept of Class II may be disciplined to follow fact and ignore fancy.

An investigation of this field leads us into a maze of piecemeal experimentation. Some of the studies have been well designed, but many have been fabricated on traditional precepts, while others have been based on the premise that man can reduce his cranial anatomy to geometry and mathematics. It is therefore not surprising that we emerge from the effort with an assortment of conclusions containing many contradictions.

In order to organize this discourse intelligently, we must begin at some point upon which we are all in complete agreement. This one morphologic fact is the postnormal closure of the mandibular denture with its maxillary opponent. By traditional teaching this tooth relation alone committed the case to the Class II category, with almost complete disregard for other anatomical compensations. This rationale evolved from the Angle[2] tenet that the upper first permanent molar was a fixed landmark and could be relied upon to orient the denture to cranial anatomy. While disputed by some members of the specialty, this was the accepted dogma of the rank and file of Angle's followers, and has been admirably described in a paper by Dr. Allan Brodie[5] entitled, "The Angle Concept of Class II, Division 1 Malocclusion." This paper is of tremendous importance historically, because it was published in 1931, the year that cephalometrics was introduced to orthodontics, yet before its diagnostic possibilities could test any of the original precepts.

From the Department of Orthodontics, Faculty of Dentistry, University of Toronto.
Read by Dr. Fisk at the Forty-eighth Annual Meeting of the American Association of Orthodontists, St. Louis, Mo., April 24, 1952.

A few quotations from Dr. Brodie's paper give us a clear understanding of the ultimate development of the Angle doctrine:

> "This paper is an attempt to show, by quotations of his own words, the growth and development of Dr. Angle's ideas, and we cannot understand the Class II question without first grasping the facts that went before it."
>
> "The Angle classification is based on the relation the lower jaw bears to cranial anatomy and this relation at present can be determined only through a study of tooth relations."
>
> "The maxillary first molar is the most dependable point for such a determination, but the location of this tooth was not intended by Dr. Angle to be taken as correct wherever found."
>
> "It is . . . if intelligently comprehended, found to be one of the most stable and unvarying points of our whole anatomy, therefore wholly trustworthy as a basis of diagnosis."
>
> (Angle in discussion after above.) "Those who listened carefully to my paper know that I intended to lay down no inflexible rule, but only one which I believe, the nearest to an inflexible rule that we have as a basis to reason in diagnosis of cases of malocclusion."
>
> (Brodie.[5]) "It should be noted that the classification depends on the position assumed by the lower jaw, never the upper. A Class II case is a distal position of the lower jaw. Many have tried to claim that a Class II case could be any of three things, namely a distal position of the lower, a mesial position of the upper, or an equal and opposite displacement of both, in short any position that would show a Class II relationship. This Dr. Angle emphatically denied and his position of 1899 has been strongly supported by scientific investigations." (These were the anthropologic studies of Hellman and Oppenheim.)

The cold scrutiny of science does not confirm many of the concepts of Class II, Division 1 malocclusions which had become a heritage of traditional teaching.

While there is traditional agreement upon tooth relationship in Class II, Division 1 cases, a similar uniformity of opinion does not exist with respect to the morphologic variations which brought about the abnormal relationship between the maxillary and the mandibular dentitions. There are at least six possible morphologic variations in the dentofacial complex, which may result in Class II, Division 1 malocclusions. These are as follows:

CLASS II, DIVISION 1 MALOCCLUSIONS
POSSIBLE MORPHOLOGIC VARIATIONS

1. Maxillary bones and teeth anteriorly situated with relation to the cranium.
2. Maxillary teeth anteriorly placed in the maxillary bones.
3. Mandible underdeveloped.
4. Mandible of normal size but posteriorly placed.
5. Mandiblular teeth posteriorly placed on adequate base.
6. Any combination of the above.

Each of these possible morphologic deviations of Class II, Division 1 has been studied by numerous investigators. In the majority of cases an investi-

gator has selected one component of the face for study in partial fulfillment of the requirement for the Master of Science degree. Therefore, to some extent at least, these studies are limited to the clinical material usually available in the orthodontic department of the dental school in a university.

In each instance, where the investigator's statistics have been reviewed, the figures have been checked by a statistician to ensure the validity of the reported samples. No doubt, the work of each investigator was checked statistically after completion, but it has been repeated for confirmation.

In the tables which follow, a simple uniform arrangement has been adopted to present a summary of the most valid evidence of these investigators. In the left column of each table is listed the names of the investigators of each component under review. In the second, third, and fourth columns, respectively, an "X" is placed to indicate his findings whether greater, similar or less than that found in the same component of Class I.

Commencing with the maxilla and proceeding to the mandible these tables are presented in sequence.

Components of Dentofacial Complex

Maxilla

Relation to cranium
Dimension—length
Relation of dentition to base

Mandible

Dimensions:

Length of body
Ramus height
Gonial angle

Relation of dentition to base
Relation of mandible to cranium

CLASS II, DIVISION I, COMPARED TO CLASS I MALOCCLUSIONS

Maxilla.—

a. *Relation to Cranium* (Table I): Three investigators, Renfroe,[18] Riedel,[20] and Young and associates,[23] studied the relationship of the maxilla to

TABLE I. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

INVESTIGATOR	MAXILLA TO CRANIUM		
	POSTERIOR	SIMILAR	ANTERIOR
Renfroe	×		
Riedel		×	
Young			×

the cranium with varying conclusions. Renfroe[18] found the maxilla more posterior in Class II, Division 1, than in Class I malocclusions. Riedel[20] reported no significant difference in the relation of the maxilla in either group,

while Young and associates,[23] using anthropometric methods, found the maxilla more anterior in Class II, Division 1, in three-fourths of the boys and in one-half of the girls studied.

b. *Dimension—Length* (Table II): The length of the maxilla was studied by Drelich,[8] Elsasser and Wylie,[11] Gilmore,[12] and Oppenheim,[17] who arrived at different conclusions. Drelich[8] found the maxilla longer in Class II, Division 1 cases; Elsasser and Wylie[11] found it longer in males, Gilmore[12] was unable to demonstrate any significant difference in maxillary length in the cases studied, while Oppenheim[17] demonstrated that the maxilla was actually shorter in Class II, Division 1 malocclusion.

TABLE II. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

INVESTIGATOR	MAXILLARY LENGTH		
	LONGER	SIMILAR	SHORTER
Drelich	×		
Gilmore	×	×	
Elsasser and Wylie	(males)		
Oppenheim			×

c. *Relation of Dental Arch to Maxilla* (Table III): The possibility that the dental arch is anteriorly placed in relation to the maxilla has been investigated by Baldridge,[3, 4] Riedel,[20] Elsasser and Wylie,[11] and Renfroe.[18] Renfroe[18] found the dentition more posterior in Class II, Division 1 malocclusions. The other investigators reported no significant difference in the relationship of the dentition to the maxilla in Class I and Class II, Division 1 malocclusion. It is significant that no investigator found the maxillary dentition more anteriorly placed in Class II, Division 1 malocclusion.

If, then, the maxilla is not usually more anteriorly placed in relation to cranium nor is the maxillary denture displaced anteriorly, some other area of the facial skeleton must provide the clue to this malocclusion. Let us, therefore, direct our attention to the mandible, which was one of the first areas of the face to be studied.

TABLE III. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

INVESTIGATOR	MAXILLARY DENTAL ARCH TO BASE		
	POSTERIOR	SIMILAR	ANTERIOR
Baldridge		×	
Renfroe	×		
Riedel		×	
Elsasser and Wylie		×	

Mandible.—

Dimensions:

a. Length of body (Table IV): Mandibular body length has received more attention from investigators than any other component of the dentofacial complex. These investigators include Adams,[1] Renfroe,[18] Drelich,[8] Craig,[7] Goldstein and Stanton,[13] Dunn,[9] Nelson and Higley,[16] Gilmore,[12] Elsasser and Wylie,[11] Hellman,[14] and Young and associates.[23]

Goldstein and Stanton[13] alone found the mandible longer in a low age group (2 to 15 years). No significant difference in mandibular body length, in Class I and Class II, Division 1, was reported by Adams,[1] Renfroe,[18] and Young and associates.[23] Nor did Elsasser and Wylie[11] find any difference in the male patients studied.

TABLE IV. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

	MANDIBULAR BODY LENGTH		
INVESTIGATOR	LONGER	SIMILAR	SHORTER
Adams		×	
Renfroe		×	
Drelich			×
Craig			×
Goldstein and Stanton	× (2 to 15 years)		× (mean age, 15.36)
Dunn			×
Nelson and Higley			× (except in females 7 to 10)
Gilmore			×
Elsasser and Wylie		× (males)	× (females)
Hellman			×
Young and associates		×	

Of the remaining investigators, five, Drelich,[8] Craig,[7] Dunn,[9] Gilmore,[12] and Hellman,[14] found the mandible shorter in Class II, Division 1 cases of all age groups; while Goldstein and Stanton,[13] and Nelson and Higley[16] reported the mandible shorter in the higher age groups, Elsasser and Wylie[11] found it shorter in female patients. The preponderance of evidence of these investigators indicates that a short mandible is characteristic of Class II, Division 1 malocclusion.

TABLE V. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

	RAMUS HEIGHT		
INVESTIGATOR	SHORTER	SIMILAR	LONGER
Drelich	×		
Craig		×	

b. Ramus height (Table V): The number of reports is small in which vertical growth of the ramus has been singled out for special study. The data of only two investigators, Craig[7] and Drelich,[8] are included in this survey. Craig[7] found no significant difference in the vertical dimensions of the ramus, while Drelich[8] found the vertical dimensions less in Class II, Division 1 than in Class I malocclusion.

TABLE VI. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

	GONIAL ANGLE		
INVESTIGATOR	SMALLER	SIMILAR	LARGER
Adams		×	
Renfroe	×		
Craig		×	
Hellman	× (Hindu skulls)	×	
Gilmore		×	
Young, Smyth, Johnson, Still		×	

while Young and associates,[23] using anthropometric methods, found the maxilla more anterior in Class II, Division 1, in three-fourths of the boys and in one-half of the girls studied.

b. *Dimension—Length* (Table II): The length of the maxilla was studied by Drelich,[8] Elsasser and Wylie,[11] Gilmore,[12] and Oppenheim,[17] who arrived at different conclusions. Drelich[8] found the maxilla longer in Class II, Division 1 cases; Elsasser and Wylie[11] found it longer in males, Gilmore[12] was unable to demonstrate any significant difference in maxillary length in the cases studied, while Oppenheim[17] demonstrated that the maxilla was actually shorter in Class II, Division 1 malocclusion.

TABLE II. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

INVESTIGATOR	MAXILLARY LENGTH		
	LONGER	SIMILAR	SHORTER
Drelich	×		
Gilmore	×	×	
Elsasser and Wylie	(males)		
Oppenheim			×

c. *Relation of Dental Arch to Maxilla* (Table III): The possibility that the dental arch is anteriorly placed in relation to the maxilla has been investigated by Baldridge,[3, 4] Riedel,[20] Elsasser and Wylie,[11] and Renfroe.[18] Renfroe[18] found the dentition more posterior in Class II, Division 1 malocclusions. The other investigators reported no significant difference in the relationship of the dentition to the maxilla in Class I and Class II, Division 1 malocclusion. It is significant that no investigator found the maxillary dentition more anteriorly placed in Class II, Division 1 malocclusion.

If, then, the maxilla is not usually more anteriorly placed in relation to cranium nor is the maxillary denture displaced anteriorly, some other area of the facial skeleton must provide the clue to this malocclusion. Let us, therefore, direct our attention to the mandible, which was one of the first areas of the face to be studied.

TABLE III. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

INVESTIGATOR	MAXILLARY DENTAL ARCH TO BASE		
	POSTERIOR	SIMILAR	ANTERIOR
Baldridge		×	
Renfroe	×		
Riedel		×	
Elsasser and Wylie		×	

Mandible.—

Dimensions:

a. Length of body (Table IV): Mandibular body length has received more attention from investigators than any other component of the dentofacial complex. These investigators include Adams,[1] Renfroe,[18] Drelich,[8] Craig,[7] Goldstein and Stanton,[13] Dunn,[9] Nelson and Higley,[16] Gilmore,[12] Elsasser and Wylie,[11] Hellman,[14] and Young and associates.[23]

Goldstein and Stanton[13] alone found the mandible longer in a low age group (2 to 15 years). No significant difference in mandibular body length, in Class I and Class II, Division 1, was reported by Adams,[1] Renfroe,[18] and Young and associates.[23] Nor did Elsasser and Wylie[11] find any difference in the male patients studied.

TABLE IV. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

	MANDIBULAR BODY LENGTH		
INVESTIGATOR	LONGER	SIMILAR	SHORTER
Adams		×	
Renfroe		×	
Drelich			×
Craig			×
Goldstein and Stanton	× (2 to 15 years)		× (mean age, 15.36)
Dunn			×
Nelson and Higley			× (except in females 7 to 10)
Gilmore			×
Elsasser and Wylie		× (males)	× (females)
Hellman			×
Young and associates		×	

Of the remaining investigators, five, Drelich,[8] Craig,[7] Dunn,[9] Gilmore,[12] and Hellman,[14] found the mandible shorter in Class II, Division 1 cases of all age groups; while Goldstein and Stanton,[13] and Nelson and Higley[16] reported the mandible shorter in the higher age groups, Elsasser and Wylie[11] found it shorter in female patients. The preponderance of evidence of these investigators indicates that a short mandible is characteristic of Class II, Division 1 malocclusion.

TABLE V. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

	RAMUS HEIGHT		
INVESTIGATOR	SHORTER	SIMILAR	LONGER
Drelich	×		
Craig		×	

b. Ramus height (Table V): The number of reports is small in which vertical growth of the ramus has been singled out for special study. The data of only two investigators, Craig[7] and Drelich,[8] are included in this survey. Craig[7] found no significant difference in the vertical dimensions of the ramus, while Drelich[8] found the vertical dimensions less in Class II, Division 1 than in Class I malocclusion.

TABLE VI. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

	GONIAL ANGLE		
INVESTIGATOR	SMALLER	SIMILAR	LARGER
Adams		×	
Renfroe	×		
Craig		×	
Hellman	× (Hindu skulls)	×	
Gilmore		×	
Young, Smyth, Johnson, Still		×	

c. Gonial angle (Table VI): The gonial angle was studied by Adams,[1] Renfroe,[18] Craig,[7] Hellman,[14] Gilmore,[12] and Young, Johnson, Smyth, and Still.[23] The majority of investigators failed to reveal any significant differences in the gonial angles of Class I and Class II malocclusions. Renfroe[18] found the gonial angle smaller in Class II than in Class I, and Hellman[14] also found it smaller in Hindu skulls.

Relation of mandibular dental arch to base (Table VII):

Three investigators, Elman,[10] Craig,[7] and Gilmore,[12] studied the relationship of the mandibular dental arch to the base. The first permanent molar was used by all three investigators to orient the denture.

Craig[7] found the first permanent molar posterior in Class II, Division 1 malocclusion. Elman[10] found no significant difference in the relation of this tooth in either Class I or Class II, Division 1 malocclusion, while Gilmore[12] reported that the position of the first permanent molar was variable in both Class I and Class II, Division 1 malocclusions.

TABLE VII. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I (POSITION OF FIRST MOLAR)

INVESTIGATOR	MANDIBULAR DENTAL ARCH TO BASE			
	POSTERIOR	SIMILAR	ANTERIOR	VARIABLE
Elman		×		
Craig	×			
Gilmore				×

Relation of mandible to cranium (Table VIII):

Baldridge,[3] Renfroe,[18] Drelich,[8] Ricketts,[19] Riedel,[20] Gilmore,[12] and Moyers[15] studied the relation of mandible to cranium. Six of these seven investigators found the mandible posterior in Class II, Division 1 malocclusion. A single investigator, Gilmore,[12] found no significant variation in the position of the mandible in the classification under review.

TABLE VIII. FINDINGS OF CLASS II, DIVISION 1 COMPARED TO CLASS I

INVESTIGATOR	MANDIBLE TO MAXILLA AND CRANIUM		
	POSTERIOR	SIMILAR	ANTERIOR
Baldridge	×		
Renfroe	×		
Drelich	×		
Ricketts	×		
Riedel	×		
Gilmore		×	
Moyers	×		

COMBINATIONS OF MORPHOLOGIC FACTORS

While the importance of the foregoing individual morphologic factors is readily appreciated, it is at the same time recognized that it is the unfavorable combination of these various factors in an individual which results in malocclusion. This combination of factors does not mean that each individual behaves as does the average for the group. For example, an individual with

a Class II, Division 1 malocclusion may have an overly large maxilla with a mandible of less than average size. Or, as Brodie[6] has pointed out, another area may be responsible for this malocclusion. The maxilla and mandible may be of average size with the maxillary bone well situated in relation to the cranial bone, but with unusual length in the cranium itself, between the tuberosity of the maxilla and the glenoid fossa of the temporal bone.

Wylie's[22] method of measuring provides a valuable means of localizing the specific factors which have combined to produce the facial disharmony and malocclusion. This system, which is specifically designed to assess anteroposterior dysplasia, is of value to the orthodontist who uses cephalometry routinely as a diagnostic aid.

PHYSIOLOGY

There is overwhelming evidence that the mandible is posterior in relation to the cranium in Class II, Division 1 cases. Six of seven research workers found this to be the case.

There are two ways in which the mandible can be situated posteriorly: (a) structurally and (b) functionally. Structurally there are two factors to consider: (1) the various dimensions of the mandible, e.g., ramus height, gonial angle, and mandibular body length; (2) the glenoid fossa can be placed farther back than in neutroclusion, as Wylie[22] and Brodie[6] both have pointed out.

Functionally there are also two factors to consider:

1. Acquired muscle contraction patterns may cause the mandible to assume a posterior position as a result of tooth interferences or a sucking habit. This abnormal pattern of contraction in the posterior fibers of the temporalis muscle becomes reflexive and, once established, causes the mandible to close posteriorly even after the removal of the tooth interference or the cessation of the habit. To correct this condition completely the muscle function pattern must be changed by re-education so that the patient closes properly into the correct occlusal contact position, thus breaking down the abnormal reflex pattern and replacing it with a new and more desired one.

2. The possibility that some of these contraction patterns may be congenital in their origin has been suggested by Moyers,[15] who observed the presence of abnormal contraction patterns in very young patients before the inception of tooth interferences or sucking habits.

Those cases of Class II, Division 1 in which the mandible is posterior to the cranium due to a structural condition are difficult to treat satisfactorily and usually must be met with compromise. On the other hand, a better prognosis can usually be made when the mandible is functionally placed in a posterior position, particularly if the abnormal contraction pattern has been induced by a tooth interference or a sucking habit.

It will be noted that up to this point Class II, Division 2 has not been discussed. This is because Class II, Division 2 malocclusion shows peculiarities

TABLE IX. SUMMARY

COMPONENT	GREATER	SIMILAR	SMALLER
Mandibular body length	1	3	8
Gonial angle	0	5	2
Ramus height	0	1	1
Maxillary length	2	1	1
COMPONENT	**POSTERIOR**	**SIMILAR**	**ANTERIOR**
Mandibular dental arch to base	1	1	0
Mandible to maxilla and cranium	6	1	0
Maxillary dental arch to base	1	3	0
Maxilla to cranium	1	1	1

which separate it morphologically from Class II, Division 1. The profile assumes a form closer to that of Class I than Class II, Division 1. The mandibular plane angle is not as great, gnathion is not set so far back anteroposteriorly, and the general appearance is not that of an Angle Class II, Division 1 malocclusion.

Hellman[14] observed on dry Class II, Division 2 skulls that the maxillary buccal segments had drifted forward. In unilateral Class II, Division 2 he observed that the buccal maxillary segment of the affected side was situated farther anteriorly than that of the opposite or unaffected side. Swann,[21] in a cephalometric study of Class II, Division 2 malocclusion, found that in this condition the upper first permanent molar erupts early and anteriorly in the dental arch with respect to both the cranium and maxilla. Most of this forward movement takes place prior to the eruption of the upper second permanent molar. From the standpoint of morphology alone this malocclusion would seem to be more closely related to Class I than to Class II. Baldridge[4] states, "The base bone of the mandible in Class II, Division 2 cases is in the correct anteroposterior relation to the face and cranium. . . ." This is further borne out by the experience of every orthodontist that Class II, Division 2 cases repsond more satisfactorily to treatment than Class II, Division 1. Thus, from the aspects of morphology, functional position, and treatment results Class II, Division 2 meets all of Angle's requirements for Class I.

Tables IX and X indicate the number of investigators of Class II, Division 1 compared to Class I, and the columns indicate their findings.

TABLE X. CONCLUSIONS

COMPONENT	INSUFFICIENT EVIDENCE	CONFLICTING EVIDENCE	PREDOMINANT EVIDENCE
1. Mandibular body length			× (short)
2. Gonial angle			× (similar)
3. Ramus height	×		
4. Maxillary length		×	
5. Mandibular dental arch to base	×		
6. Mandible to maxilla and cranium			× (posterior)
7. Maxillary dental arch to maxilla		×	
8. Maxilla to cranium		×	

SUMMARY AND CONCLUSIONS

1. An assay has been made of the statistically valid evidence of the morphologic variations in the various components of the dentofacial complex in Class II, Division 1 malocclusion.

2. While enlargement in one specific cranial area may result in a Class II, Division 1 malocclusion, usually variations in size of two or more areas combine to form this clinical entity.

3. A combination of the Angle[2] classification and a written description of the variations found in the dentofacial complex, as revealed by the Wylie[22] analysis, is recommended until a new system of orthodontic diagnosis is available.

4. Because of the large number of variables in Class II malocclusion, future studies should include:

   a. Larger sample size.
   b. Wider age range.
   c. Further investigations of normal facial growth.

5. Further knowledge respecting Class II malocclusion would accrue from intensive scientific investigation of the physiologic factors.

6. The bias of traditional teaching eventually must be superseded by scientific knowledge based upon research.

7. There is evidence to support the view that Class II, Division 2 malocclusion meets the requirements of Angle's Class I.

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COMMENT

Most of our descriptive literature of distoclusion details 12-year-old patients who happen to have come to a university orthodontic clinic. There are other malocclusions.

The literature on timing or sequence of therapy is more difficult to evaluate for it lacks quantitation. There is, however, voluminous writing in this area.

The second article was written by a team made up of three orthodontic staff members who give the undergraduate lectures on interceptive orthodontics. It included also a member of the pedodontic department; and, finally, the director of a public health orthodontic clinic where early treatment is a routine procedure.

This paper is titled "The Timing of Treatment in Orthodontics. Summary of Our Present Knowledge."

THE TIMING OF TREATMENT IN ORTHODONTICS

A Summary of Our Present Knowledge

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IN VIEW of the present stress on undergraduate teaching of preventive orthodontics, it becomes necessary for the specialists and teachers in this field to reach some conformity of opinion on the strategic use of the time factor in treatment. This paper aims to present some basic principles on this subject.

The principles of treatment timing are:

1. To prevent an orthodontic anomaly developing.
2. To treat a developed or unpreventable anomaly at the time, offering the maximum advantage to the patient in terms of cost, convenience, and results.

The initial fact evident in this study is that we need to find a fundamental basis in diagnosis and treatment planning.

Since orthodontic anomalies are reasonably viewed as disturbances of dentofacial physiology, it is primarily necessary to determine what are the basic types of physiologic disturbances.

Three basic types of physiologic aberration can be recognized:

a. A functional displacement of the mandible when the teeth are in occlusion.

b. A deformation of the dental arches on a structural basis.

c. A dimensional malrelation between the total mesiodistal width of the teeth and the dental space available for them.

Most malocclusions are composed of two or more of these basic types. This article primarily evaluates the treatment possibilities of these basic types of malocclusion. It then secondarily applies this knowledge to treatment planning in the Angle classification.

FUNCTIONAL DISPLACEMENTS OF THE MANDIBLE OR FUNCTIONAL ANOMALIES

Functional displacements of the mandible, when the teeth are in occlusion, occur in three planes. Forward or lateral displacements are not uncommon and are readily apparent. Functional mandibular retractions and overclosures may be more common, though not so apparent to clinical inspection.

Diagnosis.—Mandibular functional displacements are diagnosed by a functional analysis of the closure path, between the two positions of physiological rest and physical rest. The physiological rest position may be ab-

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Read by Dr. Jenkins at the Forty-eighth Annual Meeting of the American Association of Orthodontists, St. Louis, Mo., April 24, 1952.

normal under certain conditions of poor posture, according to Jokl,[1] hypertonic muscles (Moyers[2]), and mechanical interferences (Thompson[3]). Therefore a study of treatment response may be required in some cases for a definite diagnosis.

Phenomena Pertinent to Treatment Timing of Functional Anomalies.—

Etiology.—An anomaly of mandibular function of this nature arises from an occlusal or other interference with the normal mandibular closure. Initially a multitude of factors, e.g., thumb-sucking, mouth-breathing, may disturb the cuspal relations. The cuspal interference is circumvented by an alteration in the muscle function pattern, which is reflected in an abnormal occlusal position.

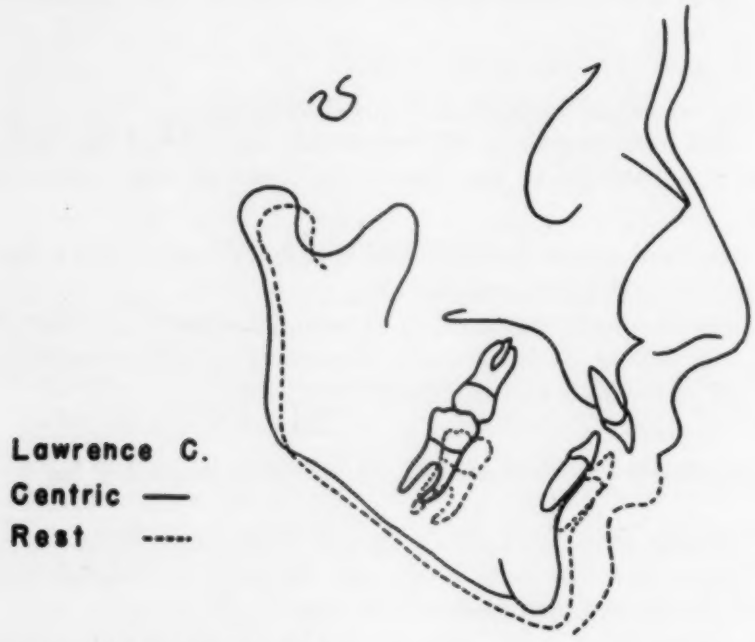


Fig. 1.—An anteroposterior functional displacement of the mandible. (From Wylie: Angle Orthodontist, January, 1949.)

Sequelae.—Functional displacements of the mandible cause arch deformity and additionally, joint damage, in which reparative changes are almost entirely absent (Sicher[4]). It is possible that functional displacements may be responsible for loss of condylar growth. Wylie[5] doubts this latter possibility for he states that, excluding obvious environmental causes, "It must be clear that if the facial proportions are, at the end of the journey which we call growth, the same as they were at the beginning of that troublesome trip, then unfortunate consequences which befall the individual along the way could only modify the size of the face by diminishing its rate of growth without alteration of proportion." Ricketts[6] has shown, however, that the mandible, exhibiting a functional retraction, has not realized its potential length and therefore its role in the facial pattern, if we can judge this pattern by the muscle length, at the physiological rest position; for muscle length is less

plastic than bone (Arey[7]). Krogman's[8] statement with reference to patterns appears to be acceptable. "Pattern at most can be merely the framework, within which, the growth impulse expresses itself, and is modifiable by whatever endogenous and exogenous factors may be impacted upon it."

Fig. 2.

Fig. 3.

Fig. 2.—A structural deformity in the shape of a maxillary incisal protraction.

Fig. 3.—*Right*, A dimensional malrelation between the teeth and the dental space; *left* and *right*, arches of similar sizes showing a large variation in the sizes of the respective teeth.

Treatment Timing of Functional Anomalies.—

Desirable Treatment Age.—In view of the fact that functional displacements of the mandible cause progressive damage and deformity to the dental arches and the temporomandibular joint, treatment as soon as possible after inception of the condition seems desirable.

Practicable Treatment Age.—Since a functional anomaly is a product of an occlusal or other interference and a conditioned reflex, a normal functional pattern is susceptible of attainment at the earliest age of patient cooperation.

The occlusal interference from deciduous cuspids and simple deciduous cross-bites may be handled by occlusal grinding, or arch expansion, and myo-

Fig. 4.

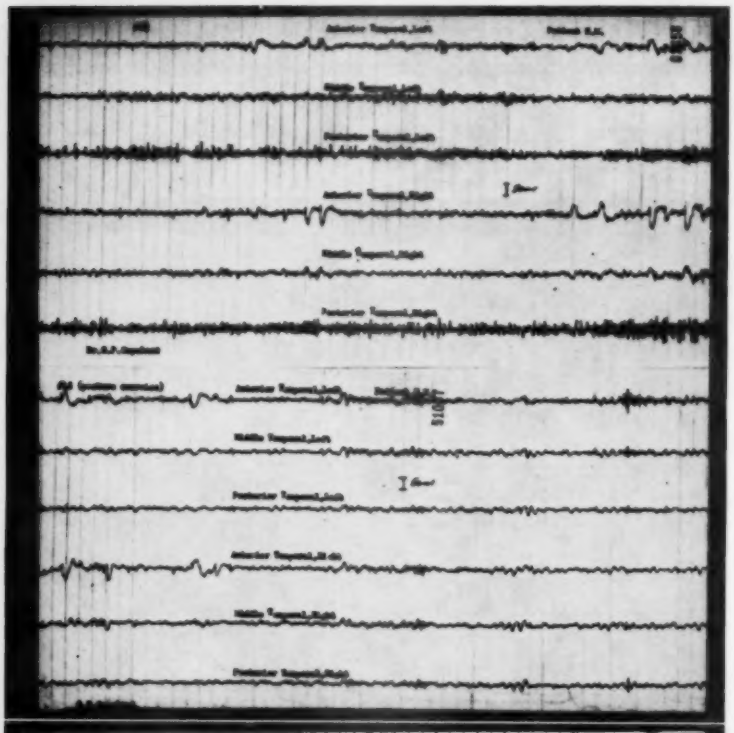


Fig. 5.

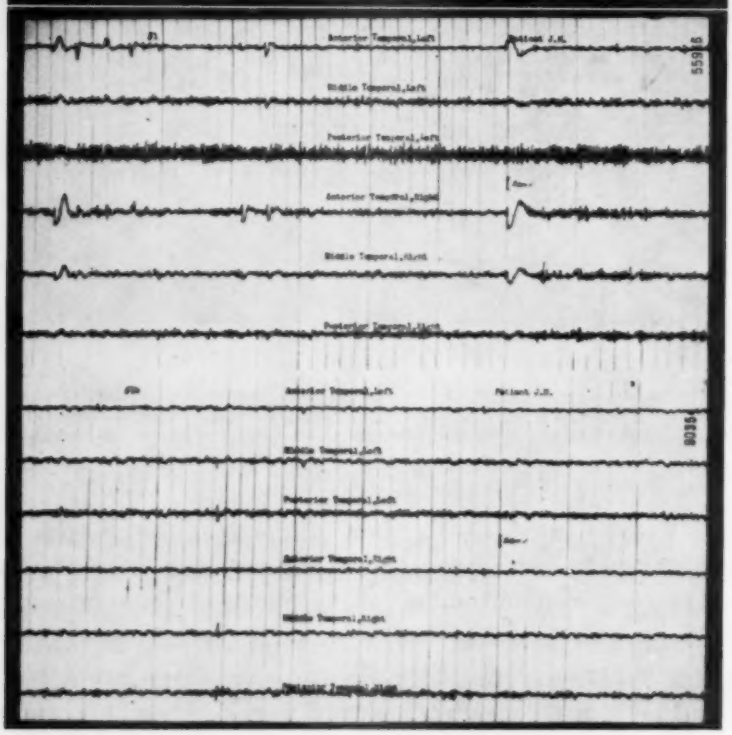


Fig. 4.—Improvement in muscle tonus immediately following myofunctional therapy. *Above,* Pretreatment; *below,* posttreatment record.

Fig. 5.—Improvement in muscle tonus at the conclusion of orthodontic therapy. *Above,* Pretreatment; *below,* posttreatment record.

functional therapy at preschool age. In its more complex elements, where marked arch deformity is present, an age of improved cooperation around 6 to 8 years may have to be awaited.

Restoration of normal function is achieved through myofunctional therapy. Moyers and Copeland[9] have indicated electromyographically the truth of Rogers'[10] thesis that a training program, based on cessation of the causative afferent impulses in the old reflex arc, and the induction of a new reflex arc by daily practice, successfully changes the muscle function to the desired pattern. Eby[11] reports response to early treatment of this type of anomaly, classed as dysfunctional, in the 3- to 6-year age group.

Rogers[10] reports success in treatment from 4 years of age. Higley[12] recommends treating functional retractions of the mandible at the age of 6 to 7 years.

DIRECTION OF FUTURE RESEARCH ON FUNCTIONAL ANOMALIES

The advent of electromyographic techniques makes possible accurate study of anomalies of the masticatory system, used, of course, in conjunction with cephalometrics.

Future studies particularly require to be directed toward collection of large numbers of records on:

1. Variations in physiological and physical rest positions of the mandible.
2. Age changes in temporomandibular functioning.
3. Muscle response to various kinds of orthodontic therapy.

DEFORMITIES OF THE DENTAL ARCHES ON A STRUCTURAL BASIS OR FORM ANOMALIES

Deformities of the dental arches on a structural basis may be associated with normal or abnormal jaw relation. The simpler eugnathic types exhibit normal jaw relations with orthodontic deformity confined purely to the dental arches. Dysgnathic types exhibit malrelation of the jaws proper, on a structural basis, which carries the dental arches to positions of malrelation.

Phenomena Pertinent to Treatment Timing of Form Anomalies.—

Etiology.—A large school of thought believes that dysgnathic types may result mainly from an abnormal pattern on a familial basis (Kloehn[13] and Wylie[5]). However, a disturbance of the growth pattern from abnormal influences, including abnormal forces, may cause both eugnathic and dysgnathic anomalies. In view of the relatively short mandible in Class II, Division 1 cases deduced from Craig's,[14] Gilmore's[15] and Ricketts',[6] studies, the figures of Hellman,[16] Crouch and associates,[17] and Humphreys and Leighton[18] of a considerably higher incidence of thumb-sucking in postnormal occlusion cases, may be significant.

Sequelae.—Deformity of the deciduous dental arches tends to be perpetuated in the permanent dentition. Additionally the anomaly is regressive and cumulative, for unerupted permanent teeth tend to follow the deciduous tooth drift and erupt in bodily malpositions. Moore and Downs[20] also indicate that

the facial pattern in malocclusion may undergo retrogressive changes, though Breitner's[19] work suggests that this pattern is susceptible to improvement. Brodie[21] has indicated a correlation between success in treatment and growth. Two other sequelae of dental deformity of some importance are the tendency of protrusive incisors to become fractured, and the problem of deformity during critical years of a child's mental development.

Treatment Timing of Form Anomalies.—

Desirable Treatment Age.—The above phenomena indicate treatment of structural deformity of the dental arches at the earliest age within the limitations of patient cooperation and deciduous root resorption.

Practicable Treatment Age.—Nonmechanical therapy to eliminate etiologic factors and re-establish normal physiologic influences has a good prognosis at an early age. Corrective therapy has a good prognosis when undertaken at the earliest age of patient cooperation. Stable early correction of severe deformations has been demonstrated by Crouch,[22] Kloehn,[23] and Closson.[24]

DIRECTION OF FUTURE RESEARCH ON FORM ANOMALIES

Just as electromyographics appear to be the procedure of choice in the study of functional anomalies, cephalometric studies offer the most value in the analysis of structural deformities. Future studies particularly require to be directed toward:

1. Age changes in *abnormal* growth patterns.
2. Familial growth tendencies.
3. Incidence and severity of malocclusions at different ages.

DIFFERENT MALRELATIONS BETWEEN THE TEETH AND THE DENTAL SPACE OR SIZE ANOMALIES

Anomalies characterized by excessive tooth material for the dental space constitute the most elusive of our problems in the field of diagnosis.

Segmental problems resulting from mesial tooth drift and loss of dental space represent a large percentage of orthodontic anomalies. Plater[26] has demonstrated that the incidence of orthodontic anomalies is 30 per cent less in an area of naturally occurring 1 p.p.m. sodium fluoride. Fluorination of water supplies may be similarly beneficial. These segmental space problems are preventable by adequate dentistry (Jarvis[27]).

Anomalies in which the teeth are generally too large for the dental space represent the potential extraction group. These are general size anomalies or discrepancy cases (Carey[28]).

Phenomena Associated With Treatment Timing of Size Anomalies.—

Etiology.—Borderline discrepancies may arise from insufficient alveolar growth. Watt and Williams'[29] demonstration of the relation between form and function stresses the role of nutrition and function in the prevention of this type of anomaly.

A size anomaly manifests itself as dental crowding and/or dental protraction. The first evidence of this type of dysplasia is seen at the age of 3 years. Baume[30] has shown that about 50 per cent of cases lacking deciduous spacing my later show crowding of anterior teeth.

At the age of 8 years clear evidence of lack of room for the permanent successors may be obtained from a Nance[31] method of analysis, supplemented by Ballard and Wylie[32] nomograph. This is accurate to 2.5 per cent (Foster[33]).

A point open to criticism in the Nance analysis is the application of Nance's average leeway to all cases for:

1. Though Nance[31] and Carey[34] have not published figures they state that arch length always shortened from the mixed to the permanent dentition. Speck[35] has demonstrated a group of 53 normals of which 14 per cent showed an increase in arch length in this phase of growth. Nance's treatment procedures may have resulted in loss of arch length.

2. With a normal statistical range about half of Nance's cases would have a better prognosis and half a worse prognosis, so this analysis cannot be used as a hard and fast rule.

3. Greiwe's[36] and Raak's[37] figures on tooth sizes on a large series indicate the need for minor revision of Black's figures as used by Nance.[31] Revised figures: maxillary leeway, 1.2 mm., mandibular leeway, 2.7 mm.

The Nance[31] analysis is a very valuable addition to our diagnostic armamentarium. However, since it has not been demonstrated that all molars necessarily drift the amount of the average leeway, it can only be assumed that any space available during or after the transition period will tend to be absorbed by molar shift. The prognosis should then be good when arch length exceeds dental length sufficiently to provide a "leeway" and only fair when arch length equals dental length. For, in this latter instance, arch length must be preserved inviolate during the transition period, and the experiences of Nance,[31] Carey,[34] and Foster[33] with lingual arches indicated the possibility of loss of arch length with this type of retainer. However, both the Illinois group[21] and Carey[34] indicate that some increase in arch length by treatment procedures may be maintained.

The prognosis of treatment without extraction is poor when arch length is less than dental length. To what degree it is poor may be indicated by Carey's[34] method of measuring the arch length over the cusps.

TREATMENT TIMING OF SIZE ANOMALIES

Desirability.—Expansion procedures in the mixed dentition era to relieve minor anterior crowding are only practicable within the limits of the basal bone in Anderson's experience (Anderson[38]).

A controversial method of treating marked size anomalies or discrepancy cases at the 8- to 9-year period consists in extracting the mandibular deciduous cuspids to relieve the incisor crowding.

Foster[33] showed no mesial molar drift in the mandible and anterior improvement with this therapy. Thus the procedure of deciduous cuspid ex-

traction combined with a preventive lingual arch to control arch collapse may be justified as part of a serial extraction program, where the prognosis is poor, and where crowding is sufficiently severe to cause periodontal damage.

In extraction cases Carey[28] recommends extraction of first premolars, before eruption of the permanent cuspids. Kelly[39] has also shown results with this form of therapy.

Early diagnosis and treatment of general size anomalies or discrepancy cases is considered advisable to forestall the development of deformity, crowding, rotation, and impaction necessitating the most complex appliance therapy.

Practicability of This Treatment.—This therapy has been successfully demonstrated clinically by Carey,[28] Kelly,[39] and Kjellgren.[40]

DIRECTION OF FUTURE RESEARCH ON SIZE ANOMALIES

Research is needed on:

1. The relationship between civilized diets and inadequate osseous bases. This logically follows in the light of Watts and Williams'[29] research, and the low incidence of malocclusion among people eating primitive diets.

2. A scientific appraisal of treatment methods, particularly in relation to timing, is required.

PRINCIPLES OF TREATMENT TIMING APPLIED TO THE ANGLE CLASSIFICATION

This second part of the article aims to apply to the Angle classification the principles of treatment timing evaluated in the first part.

Angle Class I.—This class includes *functional anomalies* as seen in some cross-bites and pseudo Class II's and Class III's. Immediate correction within the limits of patient cooperation appears indicated.

Any deformations of the dental arches are desirably treated early, within the limitations of patient cooperation and deciduous root resorption.

Malrelations between tooth size and dental space are perforce left, if extraction is indicated, until the time of eruption of premolars. Severe cases of anterior crowding requiring deciduous cuspid extraction are handled at about 8½ years of age for most spontaneous improvement (Foster[33]).

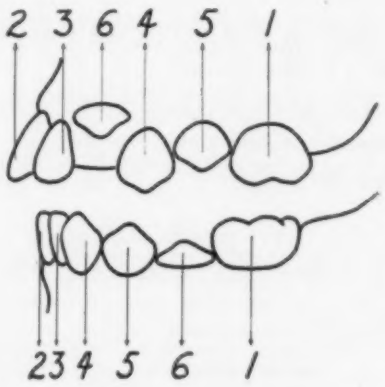
Angle Class II, Division 1.—Angle Class II, Division 1 cases vary greatly in their physiologic make-up, of functional and structural elements. Ricketts[6] has demonstrated that the majority exhibit a functional mandibular retraction and overclosure of varying degrees.

Desirable treatment timing of Class II, Division 1 cases: Cases diagnosed as having a functional element present are desirably corrected as early as possible, within the limits of patient cooperation. Since hypertonicity of the temporalis muscles may occur, even at the physiologic rest position (Moyers[2]), any Class II, Division 1 is well handled early, to liberate the mandible from growth-restraining influences.

From a preventive viewpoint Lo's[41] demonstration of the significant association of Class II molar relation with an abnormal sequence of eruption is

valuable diagnostically. Normal sequence is: $\frac{6\ 1\ 2\ 4\ 5\ 3\ 7}{6\ 1\ 2\ 3\ 4\ 5\ 7}$ with the mandibular permanent teeth erupting prior to the corresponding maxillary teeth (except the premolars). Early disturbance of the normal sequence may be observed at the 6-year level.

The chronologic time for treatment of Class II, Division 1 cases will vary with the individual treatment philosophy. On a physiological basis, if the mandibular dental arch is located within normal limits on the body of the mandible, the physiological rest position of the mandible is the anteroposterior limiting factor in treatment.



Favorable Sequence of Eruption

Fig. 6.

Copeland and Moyers[9] have demonstrated a relative inability to alter this physiological rest position of the mandible, through orthodontic treatment.

Therefore, any relative maxillary dental protraction must be reduced to this physiological rest position. Failure to do so results in a "dual bite" phenomenon, in which the patient is torn between the two positions of functional protraction and functional retraction in order to achieve occlusion.

On the basis of this treatment rationale, unless extraction is indicated, the timing of treatment of Class II, Division 1 cases appears to be most advantageous in the mixed dentition era. At this time treatment response is good and the application of intermaxillary elastics may be minimized or avoided. This is desirable, since the use of intermaxillary elastics tends to cause bimaxillary protraction (Fischer[42]) in many Class II, Division 1 cases, and so induce an apparent size malrelation. Size malrelations require extraction in the course of treatment to accommodate dental length to arch space. The age of 10 to 11 years is probably best awaited for extraction and treatment in extraction cases to avoid two phases of treatment.

Primary correction of protrusive incisors or harmful overbite may be undertaken early in extraction cases, as a protective measure, irrespective of the main treatment plan.

Practicable treatment timing of Class II, Division 1 cases: Where extraction is not indicated the reduction of maxillary protractions in the mixed dentition era has been demonstrated clinically, e.g., Oppenheim,[43] Goldstein and Myer,[44] Carey,[28] and Kloehn.[23] The age of about 8 to 10 years has been demonstrated to be a practicable age.

Where extraction during treatment is indicated, major orthodontic correction is well deferred until 10 to 11 years of age or later to avoid two treatment periods.

Angle Class II, Division 2.—Since this condition has been shown by Swan[45] and Ricketts[6] to consist of a maxillary dental protraction, combined with a mandibular functional retraction, treatment timing in the mixed dentition stage around 8 to 10 years is considered desirable and practicable. Swann[45] has obtained good results in this group.

Angle Class III.—This condition is a true dysgnathic deformation of characteristic pattern. Because of the nature of the anomaly, treatment commencing at an early age has been shown to be desirable (Strang,[46] Goldstein and Myer[44]).

TABLE I. TREATMENT TIMING

ANOMALY	FUNCTIONAL	FORM	SIZE
Class I	Early Limit: Patient cooperation	Early Limits: Patient cooperation Deciduous root resorption	10 years
Class II	Early Limit: Patient cooperation	8-10 years	10
Class III	Early Limit: Patient cooperation	Early Limit: Patient cooperation	10

GENERAL TREATMENT TIMING

Generally speaking the interception or correction of an anomaly, as early as this is physiologically practicable, appears to have undeniable advantages.

Limitations to early treatment are mainly: the degree of cooperation of the patient; the convenience of performing certain operations, e.g., extraction; and, finally, the orthodontist's lack of flexibility in appliance technique.

Advantages of early treatment are particularly:

a. *Psychologic:* Bernhardt stresses, "The best guarantee the individual can have of satisfactory adjustment in any stage of development is that the individual has been able to adjust satisfactorily in all previous stages of development. This is a rather important principle." Obviously the shorter the period of a deformity, the less its possible psychologic effect.

b. *Physiologic:* Abnormal developmental patterns may be redirected into normal channels with least deformity at an early age. Optimum development can best occur with a minimum period of disturbance.

c. *Pathologic:* Since breakdown of dental and supporting tissues probably commences early (Steadman[47]), early treatment achieves minimal accumulation of dental and periodontal damage and disease.

CONCLUSIONS

Many of our approaches to treatment timing tend to be speculative owing to serious gaps in our knowledge. These gaps may be filled by research, on the specific problems indicated under the various sections in this paper.

Some obvious leads in treatment timing lie, first, in the field of early and accurate diagnosis and, second, in the selection of the appliance for the individual case, rather than the case for the appliance.

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COMMENT

One of the reasons advanced for treating at a given age is that the appliance manipulation is easier. This argument has been advanced for every age from 2 to 20. The next paper will review our literature on the selection of forces for tooth movement as we search further for more basic principles. This is a difficult job because there is a great deal of painful argument in the literature on the subject. Unfortunately, some of the simplest basic research has not yet been done in this area.

Our staff has about every shade and variety of orthodontic opinion in it, and because of the heat that is engendered on this subject care was taken to place on the team a man who largely limits himself to the use of the twin wire mechanism, a man who limits himself to the labiolingual appliance, and one who tends to favor the edgewise mechanism.

The paper bears the title, "The Selection of Forces for Tooth Movement. A Summary of Our Present Knowledge."

THE SELECTION OF FORCES FOR TOOTH MOVEMENT

A Summary of Our Present Knowledge

H. Halderson, D.D.S., E. E. Johns, D.D.S., and R. Moyers, D.D.S., M.S., Ph.D., Toronto, Ontario, Canada

INTRODUCTION

OPERATING within the masticatory system is a complex of forces which in great part determine the direction and duration of facial growth, the positions of the teeth, and the efficacy of the occlusion. These forces may be grouped as (a) natural or intrinsic, and (b) artificial or extrinsic. While these arbitrary categories are, at best, inaccurate, they do serve as a convenience for discussion.

Natural Forces.—We may list as naturally occurring forces such obvious things as muscle contractions, blood pressure, and air pressure. However, the fact that they are natural, intrinsic, and inherent to the masticatory system does not mean that they cannot act in an abnormal fashion. Indeed, they may vary in direction, strength, and quality or sequence. Thus, a natural force may produce an undesired effect because it operates in a perverted manner. A typical example of this is the change in the direction of the tongue's force following thumb-sucking or while the pharynx is inflamed.

Artificial Forces.—The most frequently seen extrinsic forces are those induced by orthodontic appliances or thumb- and finger-sucking. One of the orthodontist's chief clinical problems is to select for usage those forces, both natural and extrinsic, which will best sustain normal growth vectors, position the teeth suitably, and provide proper function and happy esthetics. None of these forces act alone. Therefore, the clinical application of forces must take into account their interplay and reaction. In orthodontics we are most concerned with tooth positioning, for malpositions of the teeth are a most sensitive index of perversion of the forces within the masticatory system. Yet, we are further interested, for the greatest clinical changes are wrought in moving teeth, not in altering growth.

Teeth move and are moved at the discretion of the periodontal membrane. It disseminates abnormal forces against the dentures by allowing the teeth to move to new positions of equilibrium. Before analyzing the forces themselves, let us glance for a moment at this mechanism for adjustment and stabilization.

THE PERIODONTAL MEMBRANE AND TOOTH MOVEMENTS

Among the first research reports in the field of orthodontics were studies of the periodontal and osseous response to the applied forces of tooth-moving

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mechanisms. Oppenheim[5] located the areas of pressure and tension and described the realignment of the alveolar trabeculae in the direction of the force. Schwartz[7] introduced the idea of degrees of biologic effect, stating that the "most favorable treatment is that which works with forces not greater than the pressure in the blood capillaries." Gottlieb and Orban[3] described the process of root resorption. Not long later Stuteville[6] pointed out that the distance a force was active was as important as the weight of the force or the length of time that it operated. Gottlieb[2] called attention to the fact that the appliances themselves sometimes limited the rate of osseous activity, and Moyers and Bauer[4] demonstrated the variance in the periodontal response according to the direction of the applied force.

Our knowledge of the periodontal response to force application may be summarized by stating that the response varies with the weight of the force, the duration of time the force is applied, the direction of the force, and the distance the force is active. The rate of tooth movement is largely determined by the speed with which the periodontal membrane re-establishes circulation in the areas of pressure and tension. Simple movements, e.g., tipping, elicit rapid osseous changes while movements which occlude a large percentage of the periodontal circulation, e.g., bodily movement or intrusion, are completed only with difficulty.

It has been shown that, theoretically, the ideal way to move a tooth physiologically is to use a force of less than that of the capillary blood pressure (25 Gm./sq. cm.) moving less than 1 mm. distance. This may be carried out experimentally, but is a practical clinical impossibility. It should be borne in mind, however, that the further our appliance forces deviate from these theoretically desired conditions, the more likely is the tooth movement to be accompanied by pathosis. In truth, there is little evidence that any appliance can correct a malocclusion solely by physiologic tooth movements. Until an appliance is developed which will permit only true physiologic tooth movements, it seems prudent for us to admit and study the facts. The great majority of orthodontic tooth movements are made possible by a pathotic tissue response. Our task is to minimize and control that pathosis. This can best be done by a careful selection of the forces available for orthodontic usage.

FORCE CHARACTERISTICS OF THE WIRES USED IN ORTHODONTIC APPLIANCES

Most orthodontic appliances depend largely upon the use of wires as a source of force application. We will study first the manner in which forces vary within simple wires according to their size, character, or type of physical deformation. Naturally, they vary with the alloy of the wire as well, but in this paper we will confine ourselves, for brevity, to studying wires of an 18-8 type stainless steel alloy. After we have studied the simple wires, we will turn our analysis to several of the standard orthodontic appliances, all of which are made up of varying combinations of simple wires.

A recent study was designed to measure precisely the weight of the forces inherent in arch wires and auxiliary springs by means of the strain gauge. The strain gauge is an electronic device for accurate recording of minute

amounts of force (Fig. 1). It consists of a transducer for converting the force to electrical energy, an amplifier, and an ink-writing oscillograph for providing a written record. Deviations of the pen are proportionate to the force applied to the transducer. The instrument shown is sensitive to force variations of one-tenth of one gram.

The first bar graph (Fig. 2) shows the effect of varying the size of auxiliary springs soldered and wrapped around a main arch wire. The length of the spring wires was 8 mm., the deflection a constant 1 mm. Only the diameter of the spring wire was varied. The range of weights varied from 4 Gm. for an 0.010 inch wire to 120 Gm. for an 0.024 inch wire.

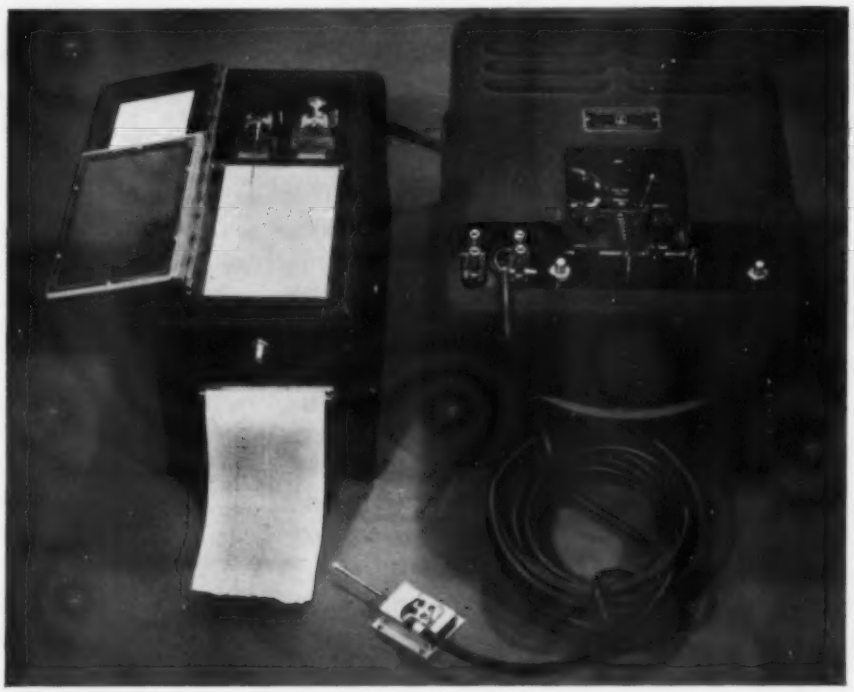


Fig. 1.

In the next bar graph (Fig. 3) we see how varying the length of the spring affects the amount of weight against the tooth. In this instance, 0.020 inch wires were soldered and wrapped in a uniform manner around a main arch wire. The spring deflection was a constant 1 mm.; only the length of the lever arm varied. The results of this experiment illustrate why clinicians have favored recurved springs, high vertical loops, and clock springs, for these are all methods of lengthening the lever arm and thus producing gentler action.

Thus far we have studied auxiliary springs only. Now let us examine the arch wire itself. Fig. 4 shows the effect of varying the size of round wire in a full "strap-up" employing edgewise brackets on all the teeth. In this case all the readings were taken on a maxillary lateral incisor, all the other teeth being ligated to the arch wire. The distance of arch wire deflection to

the bracket seat was a constant 0.020 inch. In every instance we have measured the amount of force to move the wire to the bracket. There is a mobility of the tooth in its alveolar socket. This mobility allows part of the distance to be absorbed by the tooth moving to the wire. Therefore, after the tooth is ligated to the arch wire, all of these forces decrease a bit.

Clinicians using the edgewise mechanism have learned to start their cases with a series of light round wires. This is sound therapy for two reasons: (a) it takes as much advantage of tipping movements as is possible, and (b) it utilizes forces much lighter than are possible with a standard edgewise wire. Fig. 4 demonstrates why the use of these light round wires has proved of value in starting cases.

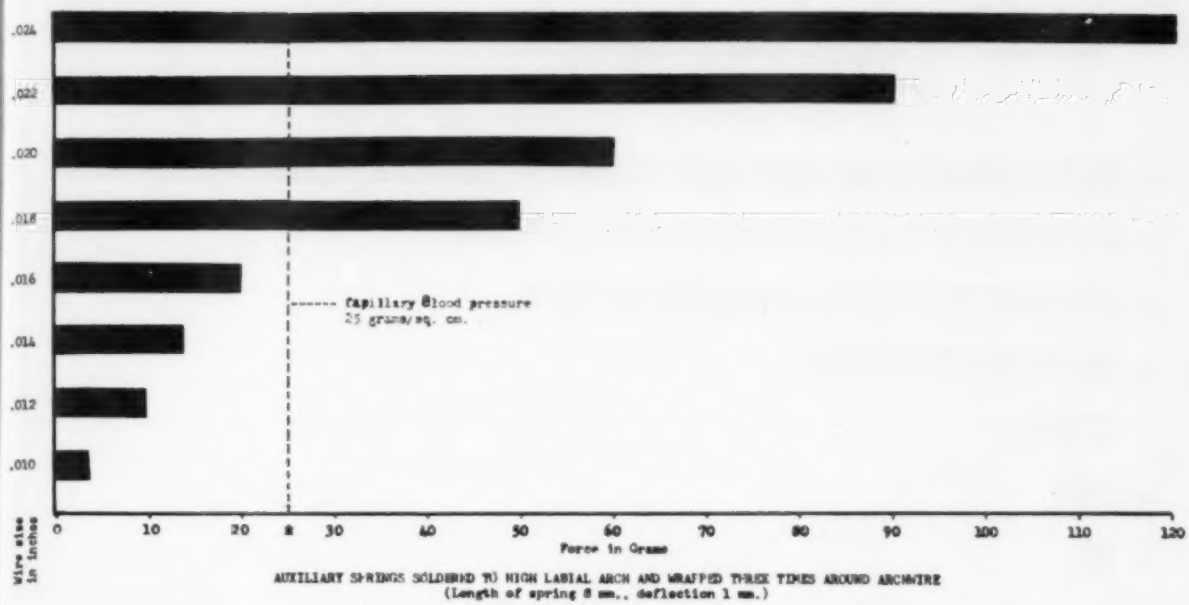
Nine millimeter vertical loops in an 0.0215 inch by 0.0275 inch steel edgewise arch wire were tested in a similar manner. The appliance was ligated to the six maxillary anterior teeth and to the second premolars and first and second molars, the first premolars having been extracted. Opening the vertical loops 1 mm., such as is done to close space in extraction cases, resulted in a force weight of 800 Gm. on each side. This distributes a total of 1,600 Gm. over twelve teeth. Even if each tooth bore an equal share of the total weight, which is not the case, the load is unduly excessive. For those who prefer this method of space closure, there are several suggestions: (a) use smaller-sized rectangular or square wires, or (b) use softer alloy wires for all vertical loop procedures.

A tooth attached to an edgewise wire rarely is undergoing one simple type of movement. It may be tipped, intruded, and rotated simultaneously. This makes it most difficult to measure the forces acting within the appliance. It is important to note, however, that, in many instances, the strain gauges now being used, whose upper limit is two pounds, or approximately 900 Gm., are unable to record the weight applied.

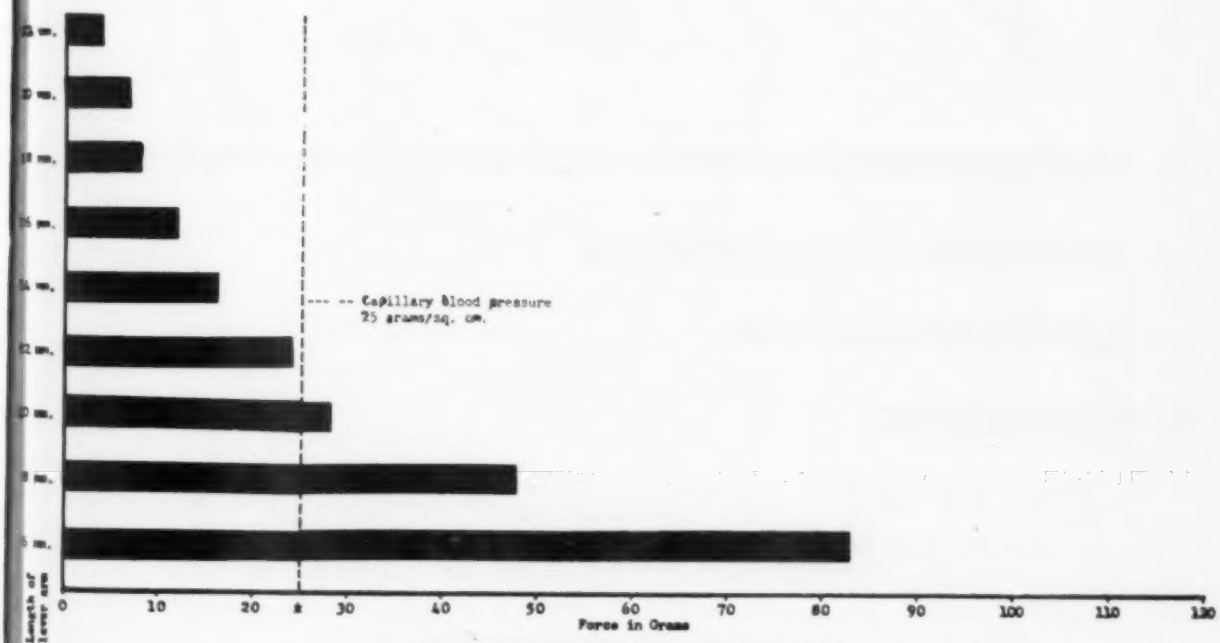
The forces used in the wires that make up the Johnson appliances are shown in Fig. 5. Again the force weight against a maxillary lateral incisor was tested with the arch wire deflection to the bracket seat held at a constant 0.022 inch. Flat wires, twin wires, and a single 0.010 inch wire are shown in the bar graph. Of particular interest is the great difference in weights shown between flat wires of 0.012 inch and 0.010 inch thickness.

Not all orthodontic appliance forces arise within wires; coil springs and elastics have wide use. The great range of sizes of elastics available makes it possible to use any weight of force desired. But another factor enters in their use, viz., the force increases as the elastic is lengthened. This is quite the opposite effect to that seen in auxiliary springs. When tooth movements are desired, the elastic force should be of a light nature, as has been discussed previously. It may be desired to apply force to the temporomandibular musculature for possible alterations in the mandibular closure pattern. This can be brought about by providing good anchorage in the dentition and by using very heavy elastics. The heavy forces have less chance of moving teeth than the lighter forces and yet are more likely to result in muscle adaptations, for they act as a form of myotherapy.

Fig. 2.



AUXILIARY SPRINGS SOLDERED TO HIGH LABIAL ARCH AND WRAPPED THREE TIMES AROUND ARCHWIRE
(Length of spring 8 mm., deflection 1 mm.)

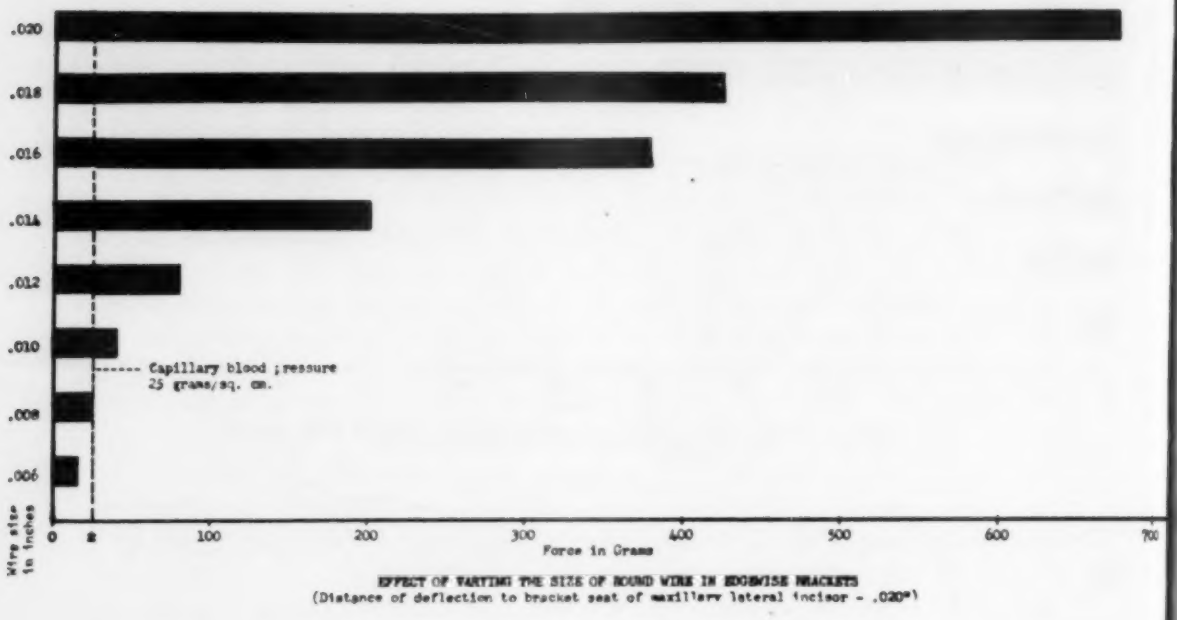


EFFECT OF VARYING THE LENGTH OF AN AUXILIARY SPRING
(.020" round wire soldered and wrapped three times. Deflection - 1 mm.)

Fig. 3.

It is fortunate that it is so easy to test elastic force in the mouth, and every practicing orthodontist should routinely use the Richmond or a similar gauge. The Richmond gauge has been tested on the strain gauge analyzer and found sufficiently accurate for clinical use.

Fig. 4.



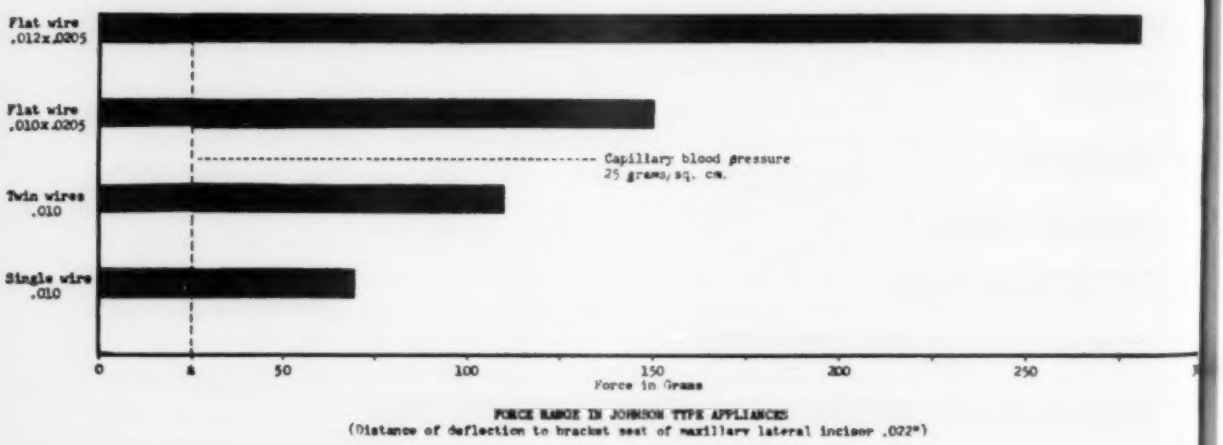


Fig. 5.

FORCE ANALYSIS OF SOME ORTHODONTIC APPLIANCES

Let us, for a moment, analyze the manner of force application in three of the most popular orthodontic appliances. In each case we will note which movements are possible and which difficult. Attention will also be called to the

weight of the force against the teeth, the distance the force is active, and the length of time the force is held in place.

Labiolingual Appliance.—Movements with this appliance are limited to tipping except for the molars which are banded and may be rigidly moved by use of extraoral anchorage. Certain tooth movements, e.g., bodily movement, are difficult to obtain, and others, e.g., rotations, often require elaborate adaptations of the appliance.

A wide range of forces are used, but it is relatively easy to adjust the auxiliary springs within the lower limits of that range. The distance through which the force is active is great, and there is not so precise control of this factor as with the multibanded appliances. Since this is true, it is fortunate that it is possible to keep the weight of the forces low. Another feature is the continuity of force application. The weight of the force is held against the tooth through some distance and for a great length of time. Contrary to popular belief, this appliance may be used without intermittent force application. This need not be the case, if very light forces are used and appointments are properly spaced.

Because the teeth are not rigidly held to the arch wire, maximum opportunity is provided for the effects of tongue and lip muscles to be shown. Further, the transseptal fibers are allowed to affect the position of adjacent teeth. It should be noted that the force of the lips is transmitted through the labial arch wire to the molar teeth, when no other teeth are banded. This has been studied with both the high labial and labial arch wires. Amounts of pressure were measured which were large enough (25 Gm. average) to be considered significant in maintaining molar position, when headcap or intermaxillary elastics are not in place.

Edgewise Mechanism.—A force may be applied to any tooth in any direction with this appliance. The weight of the force varies greatly with the three orders of bends, and nearly all forces inherent within this appliance are high. None of our group who use this appliance could routinely make adjustments in the lower force range. One might well ask, then, how it is used so successfully. The answer is that the distance the force is active is relatively small and that the movement is precisely controlled. Of significance, too, is the fact that the initial force is the greatest and the weight diminishes with time. Some appliances, e.g., coil springs, keep the weight of force relatively constant and thus deny the periodontal membrane a chance to be rejuvenated. The extremes of force used in the edgewise mechanism make it imperative that sufficient time elapse between appointments to allow the periodontal membrane to recover from the insult and injury of the appliance. Histologic studies on human beings indicate that, for this appliance, as it is ordinarily used, three weeks is a minimum period between adjustments (Gottlieb[2]). During the round wire stages of treatment, there may be more frequent adjustments. The edgewise mechanism operates, more than any other appliance, in the realm of controlled pathology. It would be of little practical clinical use if this were not true; yet this fact is often neglected. The clinician who adjusts the appliance with forces of such severity

that he routinely prescribes aspirin after weekly appointments, is not only endangering the tissues with which he works, but he is also failing to use an excellent mechanism to best advantage and is making a great deal of extra work for himself.

This appliance does not take advantage of some of the natural forces within the masticatory system. For example, the lips and transseptal fibers, which are made use of in other instances, are not able to show their effects until the retention stage. There is a recent tendency among edgewise clinicians to use the appliance in segments or in simplified forms. This will require greater care in the matter of force application, but it does allow one to take better advantage of helpful natural tendencies within the masticatory system.

Twin Wire Appliance.—The twin wire appliance is largely limited to tipping and minor rotary actions. By use of a flat wire, movements more nearly like bodily tooth movements are possible. Movements of the anterior teeth are carried out with dispatch and ease, but movements of posterior teeth are more difficult and some are nigh impossible.

A wide range of forces may be employed with this appliance, but it is quite easy to work in the lighter range of force application. The greatest danger in this appliance lies in the distance through which the force may be applied to a tooth. There is a temptation to keep the force, light though it be, active for too long a time and too great a distance. During animal experimentation it was found to be easier to cause root resorption with this than any other appliance tested. In spite of the light weight the pressure may be far too continuous for safety. The appliance is admirably designed for use within the desired limits, but the repeated claims of "automatic" tooth movements seem ill-advised. Many edgewise patients are seen too frequently for good periodontal response; but, with the twin wire appliance, care must be taken to avoid attempting too much movement between appointments.

Our modern appliances have evolved and survived not so much because of their engineering design, but because they do, indeed, work in the mouth. Regardless of the mechanism, all orthodontic appliances must adhere to certain physiologic principles, or they fail to move teeth well. These physiologic principles do not vary with the size, shape, number, or alloy of wires attached to the teeth. When one appliance works more efficiently in a given case, it is not that the tinsmithing was done more cleverly, but rather that its inherent action was more in keeping with the principles of tissue physiology. This is seen in the evolution of the appliances which have survived for use today. Gone are the jackscrews, rubber wedges, and threaded arch wires. Even our most popular appliances are not used as they were several years ago. These alterations in design and use have occurred because clinicians observed they worked better. Why did they work better? Because they more nearly adhered to the rules of nature. What are the principles? They can be reduced to two, viz., select for use forces which work with the periodontal membrane and do not attempt movements of teeth against the natural force tendencies of the muscles.

No more do orthodontists attempt massive expansions of the dental arches, for we now know that the teeth inevitably find a position of balance between the tongue and the buccal wall. We know a great deal less about the anteroposterior position of balance to which the teeth will come. There is a constant tendency for the teeth to be moved mesially. This is brought about since the vectors of the contractions of the tongue and buccal wall muscles are mesial in direction. If this is the natural tendency of the teeth, the question immediately arises as to what influences the rate of distal movements of teeth. In fact, we might ask, "Can teeth be moved distally?" Let us examine this question, for it exemplifies many of the problems in the selection of forces.

During distal movements of teeth, we are facing three problems in force control: (1) the natural drift tendencies of the teeth; (2) the force of the musculature acting through the incline planes of the teeth; (3) the possibility that counteracting mechanical forces within the appliance itself might interfere. This combination of force vectors is one of the most difficult encountered.

A series of cases were studied in which distal movement of the maxillary first molars had been attempted. An attempt was made to correlate the rate and amount of distal movement with several factors. Cephalometric lateral headplates were available for measuring the effects of the treatment of the patients. Distal movement of the maxillary first molars was measurably evident in many of the cases after treatment with several different appliances. However, it was possible to correlate the progress of distal movement with two factors only, viz., (1) the position of the maxillary second molar and (2) the number of teeth attached to the arch wire *and not being moved in the same manner*. There was more rapid movement of the first molar distally before the second molar was impinging on the cervix of the first molar; and this held for all appliances tested. When the second molar wedged against the first molar, the best any appliance could do was to maintain the position of the first molar. After the second molar turned its direction and erupted, the pressure apparently then was eased, for distal movements again came to be evident.

When a large number of teeth are ligated to an arch wire and movements of the teeth are taking place in several different directions simultaneously, these movements must provide a certain amount of resistance and interference to one another. This was first pointed out by Gottlieb.[2] It was noted, for example, that the first molars moved distally more efficiently when tip back bends in segmental arch wires involving only the cuspid, premolars, and molars were applied in the manner suggested by Carey,[1] than when a similar type bend was used in a full edgewise appliance. The forces were the same in each appliance, but the full appliance provided resistance to the distal movements of the lateral teeth by the very fact that it was ligated to the anterior teeth. Similarly, with the twin wire appliance, it was found that without coil springs ahead of the buccal tubes the intermaxillary elastics could not move the molars distally as well. The effect of the coil springs is to separate the molars' movements from the anchoring effect of the teeth attached to the twin section anteriorly. A labial arch wire touching all the teeth will not

move the molars as readily as one which is held away from the teeth by stops ahead of the buccal tubes. Even a lingual arch wire was shown to move a second molar distally quite speedily by means of an auxiliary spring, but it does this more easily if the second molar is not tied to an arch wire and is in the process of erupting. The speed with which any tooth movement is effected and its maintenance in the new position are determined largely by the selection of the forces which operate against the tooth. There is no reason to suppose that the factors which influenced the movement of the maxillary first molar do not apply to other tooth movements.

It is possible, however, to move teeth and treat a case disregarding the musculature; it is not possible to retain that case without due regard for the muscles' influence. Relapse of any case is nothing more than a failure to place the teeth into a stable position of equilibrium among the forces acting on the denture. While we know some things about the role of these natural forces in treatment, we know much less about them during the retention stage. Until a great deal more work is done, we shall continue to see a few perfectly treated cases fail to retain well.

We may summarize by listing a few rules to be adhered to in the selection of forces during orthodontic therapy. First, the natural forces:

1. So far as possible, work in the same direction as the natural forces of the masticatory system.

2. Correct any imbalances within the inherent forces of the masticatory system as soon as possible.

3. Work within the limits of tissue tolerance. Do not expect anything but a pathotic response to the use of excessive force.

4. Leave the case with all the natural forces well developed and in balance.

Now the artificial forces:

1. Select those teeth needful of movement. Then determine the direction each tooth is to go and what type of tooth movement is involved.

2. Break down into groups the teeth which will be moved in a similar manner.

3. Decide the most logical sequence of tooth movement.

4. Choose the mechanism which will most efficiently allow each movement to be effected.

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CONCLUSION

Until one has surveyed several hundred articles and tried to precipitate the thoughts of many writers into three small articles, it is difficult to realize the tremendous amount of work that has been done in the field of orthodontics. Those who think they have new ideas would do well to browse among the writings of our early greats of forty or fifty years ago. Phrases may seem old-fashioned but facts never are out-of-date. Sometimes these early writers were wrong, but frequently all they needed was good scientific corroboration. Because the scientific method had not yet been strenuously applied to orthodontic problems, it was all the more difficult to prove which concepts and ideas were correct. It is one thing to know that a procedure works; it is quite another thing to understand why it works. That is why those who write have a singular responsibility. It is, if you write, more important to know *why* your results are successful than it is to know *how* to make your appliance. There is no substitute for thirty years of clinical experience, but those with this experience can better help those who are younger if they would forget their religious fervor and clearly analyze what they do; if they would work less hard to convince others that theirs is the *only* true and perfect way to orthodontic eternal happiness. Ours is a science, not a religious order, and as such demands careful analytical thinking and writing. The time is long since past when we should act blindly simply because one of our leaders, however distinguished, bids us follow. Ours is the only field of dentistry with a genuine scientific literature, for the simple reason that our great minds early sought the truth and challenged one another's ideas.

"Science warns me to be careful how I adopt a view which jumps with my preconceived notions, and to require stronger evidence for such belief than for one to which I was previously hostile."

"My business is to teach my aspirations to conform themselves to fact, not to make facts harmonize with my aspirations."

"Sit down before facts as a little child; be prepared to give up every preconceived notion, follow humbly whatever and to whatever abysses nature leads, or you shall learn nothing."—*Thomas Huxley.*

A Bronze Plaque Honoring Leuman M. Waugh Unveiled at Columbia University

THE Orthodontic Department of Columbia University was the scene of a very happy and enthusiastic occasion on Wednesday, June 11, 1952. It marked the annual "home-coming" meeting of the Orthodontic Alumni Society, which also holds other scientific sessions throughout the year. This gathering was in honor of Dr. Leuman M. Waugh, Founder and Director of the Orthodontic Department for post-graduate and graduate teaching from 1922 through 1945. It was also in this Department that, in 1927, Dr. Waugh inaugurated the first in history of a series of short courses in advanced training for Orthodontists under University discipline. During his tenure there were one hundred and forty post-graduates in Orthodontics, not to include the large number of orthodontists who embraced the short courses in extension teaching.

The Orthodontic Alumni Society was organized in the fall of 1935 and now numbers 248 graduates scattered throughout twenty-two states and ten foreign countries. It should be very gratifying to both the University authorities and Dr. Waugh that approximately 600 orthodontists have received the benefits of these educational and training facilities.

The Alumni Day program was sponsored by the Joseph E. Johnson Study Group and there were 150 "old grads" present. It was interesting that Dr. Waugh opened the morning program with a scientific lecture and closed the afternoon exercises with his thanks to the host of grateful students and colleagues. The morning program consisted of four lectures as follows:

"Application of Biologic Principles in Daily Practice"
Dr. Leuman M. Waugh

"Space Closing in Extraction Cases using Johnson Appliances"
Dr. Joseph D. Eby

"Technical Variations in Treatment"
Dr. Lowrie J. Porter

"Tissue Bearing Anchorage in Conjunction with the Johnson Appliances and Modification Thereof"
Dr. Walter R. Bedell

Luncheon was served at Bard Hall and in the afternoon the program was resumed with a series of ten table clinics:

Removable High Labial Working Retainers and Use of Spiral Coils
Dr. Clare K. Madden

Use of Headcaps in Conjunction with Johnson Technique
Dr. C. Sterling Conover

Extraoral Force in Conjunction with Johnson Technique
Dr. Ashley E. Howes

Fixed Mandibular Anchorage Elastic Force
Dr. Wilbur J. Prezzano

Space Closures in Extraction Cases and Canine Rotation with a Modified Johnson Technique
Dr. Norman L. Hillyer

Class III Cases Using Intraoral Anchorage
Dr. Donald B. Waugh

Routine Procedure in Treatment of Extraction Cases
Dr. Franklin A. Squires

Shortcuts at the Chair
Dr. Joseph D. Eby

Supplement to Morning Paper
Dr. Walter R. Bedell

Class III Setups. Use of Cuspid to Cuspid .0056 Coils in Extraction Cases
Dr. John J. Dolce

At 4 p.m. the assembly gathered at the entrance of the Clinic for the exercises attendant upon the unveiling of a bronze plaque in honor of and to perpetuate the great contributions so unswervingly made by Dr. Waugh as a Founder of both the School of Dentistry and the Orthodontic Department. The plaque, 19 × 32 inches in size, is mounted at the entrance of and facing toward the Clinic.

The gathering was augmented by the wives of members, former Staff members, University Faculty associates, and a number of personal friends. Dr. John Dolce as Master of Ceremonies opened the meeting with the following address:

"Dean Hickey, Distinguished Guests, Doctor Totten, Ladies and Gentlemen: Today's event marks the fruition of a dream and a plan of one and a half years, almost to the day. It was during the first week of December, 1950, after having received the support of Joe Eby, that I discussed further the possibilities of this Honor to our friend with Dr. Arthur Totten and Dr. Maurice Hickey. The enthusiasm and support of these men gave me the necessary green light to go ahead with the further plans.

"At this time the following men were approached and unhesitatingly accepted the invitation to participate in this planning. We would all appreciate it very much if each would take a bow:

Dr. Joseph Eby
Dr. Irving Grenadier
Dr. John Mayers
Dr. Edward Murphy
Dr. Clinton Van Natta

There has never been a doubt in my mind that, with the support of this fine committee, everything would develop in a dignified manner, worthy of Dr. Waugh.

"It was unanimously felt from the beginning that this honor was to be sponsored and supported by all of his former students, associates, and colleagues. With this in mind, a letter of solicitation was sent to these different sources. The contributions were purposely limited to a small sum, so that it might be shared by many, rather than by a few. I might say here that the response to this letter was astoundingly gratifying. The many wonderful compliments paid our guest were most heart-warming, to say the least. Compliments and contributions came from all over the country. I wish I had time to read all of these to you, but would like to take this opportunity to quote from a few chosen at random:

"New York State: It gives me great pleasure to send a check for a gift to Dr. Waugh. He worked very hard to make the Orthodontic Department of Columbia the wonderful place it is. He also helped so many students, and I shall always be grateful to him for all he did for me.

Colorado: Dr. L. M. Waugh has made tremendous contributions to orthodontics and it pleases me to learn that something is being done to let him know that we are grateful to him. Too often the kind words and honest praise are made too late.

Connecticut: I was glad to get your letter regarding the plaque for my old friend Leu Waugh. It is a grand idea and as one of the founders and board workers for the school for many years he should be up there in Bronze. More power to you and your committee, and if I can help any in this popular movement, please let me know.

Florida: I am proud to be numbered among the friends and associates of such a great man.

Kansas: Dr. Waugh was an instructor of Histology to the hygienists of Columbia, Class of 1922, of which I was a member. Dr. Waugh has been such an inspiration to me, and I appreciate all he has done to put dentistry, orthodontics, and hygiene on the high plane these professions now occupy, so I too am enclosing my check.

New Jersey: Glad to hear of this opportune effort to pay tribute where tribute is due.

North Carolina: Dr. Waugh has meant a great deal to our profession and those of us who know him best know that he will go down in history as one of the greatest men that dentistry has ever known. I think it is very appropriate and I have always admired Dr. Waugh. He

has given most unselfishly and has contributed much in the field of orthodontics.

Okalahoma City: The wealth of his experience and knowledge radiates those in his presence. He is a grand character and so unselfish in his devotion to his profession.

New York City:

—1—

Orchids to you and the rest of the committee for your inspiration to pay well-deserved honor to Dr. Waugh. As one of his early post-grads, I have the happiest memories of the two years spent under Dr. Waugh's superb tutelage. And as the 'father' of our now flourishing baby, the Orthodontic Alumni Society, I can attest to Dr. Waugh's value as a 'midwife.' His assistance and encouragement were invaluable. No one who has had contact with Leuman Waugh, teacher, scholar, executive, gentleman extraordinary can have failed to be impressed by his ability, graciousness and charm.

—2—

I heartily agree with your idea and think it is a wonderful suggestion. I know of no one who has given so freely of his time or has done more for orthodontics than our good friend Leuman. He has always been willing to help the younger men who were getting started in practice and has been an inspiration to them as he was to me when I started out on my own. It was a privilege to have worked with him when he started the Orthodontic Department of Columbia, and I look back on that association with much pleasure and gratification.

—3—

I can't imagine anyone I'd like to honor in this small contribution more than my good friend Leuman. It's a recognition long delayed and the University will take reflected glory in such a commemoration.

—4—

A noble gesture, to a noble man, who has done so much for dentistry and orthodontics.

—5—

Have only met Dr. Waugh a few times but having heard him lecture, reading his articles and hearing him mentioned so many times feel as though I know him well. Realizing what he has done for orthodontics and for all of us is the reason why I would like to be among those who wish to show their appreciation.

"I am certain that these sentiments are also those of each and every one of you here today. As for myself, from my very first contact with him, when I was a Junior student in this Dental School, he aroused my admiration which has grown consistently during my closer association with him through these past years. In the development of any young man's career, influences by only certain forces predominate. In my career, I am happy to say, that a very major influence has been Dr. L. M. Waugh—to whom I am grateful. It was my sincere admiration, love and respect for Dr. Waugh which was the original inspiration for this honor, which I felt was well deserved, and which has made the necessary detail work such a tremendous pleasure for me. God bless you, Dr. Waugh."

Dr. Dolce then introduced Dr. Eby who delivered the following biographical review of Dr. Waugh's career as a teacher, with personal remarks:

"It is a great privilege to be able to participate in these exercises this afternoon in behalf of my dear friend Leuman Waugh. For more than thirty years our friendship has grown through so many contacts and experiences as to have become enriched with a mutual understanding the quality and depth of which few friends ever attain. We have truly shared each other's joys and sorrow with equal enthusiasm and sympathy.

"We are the last survivors of the Founders, in 1923, of the New York, now the Northeastern Society of Orthodontists. Through all these years we have worked diligently together and have shared alike the duties and the highest honors within the gift of the Northeastern Society of Orthodontists, the American Association of Orthodontists, the New York Academy of Dentistry, and the American Board of Orthodontics.

"I have also served as an instructor in many of the short courses given here at the University under his direction. There has never been a moment when I have not enjoyed the effervescence of his personality or admired the staunchness of his character in the unselfish pursuit of the honesty of his convictions in any cause his good judgment thought was right.

"It is a great pleasure to all of us to see Doctor William J. Gies here this afternoon—to know him is to love him. Dr. Gies and Dr. Waugh served together as Co-founders of the School of Dentistry. In recognition of Dr. Gies' enormous contributions to Dentistry a similar occasion was held in his honor on Floor *F* last Friday afternoon. In his response Dr. Gies referred to the fact that though not a dentist he had been a 'preacher of dentistry' for a long time. Am sure no one has ever heard him say or do anything that would disqualify him as a preacher, but I couldn't help but think at the time how he is one of the real patriarchs of dentistry and one of the greatest nestors of modern dental progress. [Dr. Gies took a bow amidst applause.]

"Will all of you present who served on faculties with Dr. Waugh please rise! [applause] Dr. Waugh, this scene of loyalty and friendship should make you very happy.

"I wish to take only a few more brief moments to refer to Dr. Waugh's successor here in 1945. We first met in 1919—when a fellow did really need a friend. Little did we know at that first meeting that it was to mean a

professional career for him, and one of the finest associations and friendships of our lives together. At that time he was carrying fresh, multiple, combat wounds, and he was a *fighting* Sergeant of the *fighting* Irish, 69th Infantry of the *fighting* 42nd Rainbow Division, Arthur C. Totten.

"We are gathered here on this very pleasant occasion to honor Dr. Leuman Maurice Waugh for his long and brilliant career as a teacher. It is a rare occurrence for anyone to literally lay down his diploma, pick up the responsibilities of teaching, and continue with them, with ever-expanding vision and achievement, for a period of forty-five unbroken years. In my own long career, associated with teaching institutions and teachers, I have known of only two other parallels, and those are the records of my own preceptor, the late Dr. Thomas P. Hinman of Atlanta, Georgia, and Frederick B. Noyes of Chicago . . . all three of these men were close friends.

"Through these years Dr. Waugh has been to all of us respectively our teacher, associate, confrere, and loyal friend. From his start in the fall of 1900 until his retirement from teaching in 1945, he has risen from the grade of demonstrator through all the levels of both undergraduate and graduate teaching to the distinguished position of Educator. Let us briefly take a look at some of his accomplishments:

"Dr. Waugh was graduated from the University of Buffalo with the degree of Doctor of Dental Surgery in June 1900. At the opening of the fall term there in September 1900 he served as demonstrator in Prosthetic and Operative Dentistry, and lecturer in Histology. In February 1901, beginning with the spring term, he was elevated to the chair of Histology and Embryology, serving in this capacity until 1912. The following is a list of some of the teaching positions he has held:

1—Professor of Special Pathology, University of Buffalo, 1904-1914
2—Officer of Governing Faculty, University of Buffalo, 1908-1914
3—Upon removal to New York City he became a member of the Organization Committee of the Dental School, Columbia University, 1915-1917
4—Secretary of the Dental Faculty, Columbia University, 1917-1928
5—A Founder of the School of Dentistry, Columbia University, and Secretary of the Administrative Board, 1917-1929
6—Professor of Histology and Embryology, Dental School, Columbia University, 1917-1924
7—Acting Director of the School of Dental and Oral Surgery, Columbia University, 1926-1927
8—Associate Dean of the School of Dental and Oral Surgery, Columbia University, 1927-1933
9—Professor of Orthodontics, Chief of Staff, Dental School, Columbia University 1921-1945
10—Founder and Director of the Orthodontic Department for Post-graduate and Graduate Teaching, Columbia University, 1922-1945

"Under Dr. Waugh's initiative there was inaugurated in 1927 the first in history of a series of short courses in advanced training for orthodontists

under university discipline. For these courses he brought to Columbia such celebrities as Drs. Mershon, Lischer, Hellman, Strang, Johnson and others. These courses attracted to Columbia University, through 1945, approximately 550 orthodontists from all sections of the United States, Canada, and a number of foreign countries. During his tenure, 1922-1945, one hundred and forty students completed the full-time postgraduate course and were awarded the Certificate of Proficiency in Orthodontics by the Trustees of Columbia University.

"Dr. Waugh became a member of the American Association of Dental Schools in 1901 and remained continuously active until 1947. During that period he served on a number of important committees, and presented several papers, some of which dealt with both undergraduate and graduate teaching of orthodontics and other courses in the dental curriculum. At the time of his retirement from the American Association of Dental Schools, he was Chairman of the Committee on Education.

"Dr. Waugh was granted retirement from Columbia University in June 1945 because of statutory requirements. In 1949 Dr. Waugh received the appointment of Director-at-Large on the American Board of Orthodontics, the first such in the history of the Board. This distinction was due to the fact that his former students, scattered throughout America, comprise approximately half of the membership of the American Association of Orthodontists. Dr. Waugh is currently President of the American Board of Orthodontics.

"In previous recognition of his skill and record as a teacher, Dr. Waugh has received the following awards:

1—Honorary Professor, Faculty of Dentistry, University of Montreal, 1948
2—His Alma Mater, the University of Buffalo celebrated its 100th anniversary last December. About fifty outstanding alumni were awarded a citation. Dr. Waugh was one of the two dentists thus honored.
3—The University of Montreal at its annual graduate commencement exercises on May 30th, 1952 awarded four honorary degrees, one of which was a Doctor of Science to Dr. Waugh.

"Such rare achievements as these are not accomplished by exacting manual or physical effort alone, as if anyone who would give the time could do the same. There are many exacting traits of character and personality which are vitally essential in such successful careers, and also there are many other elements of human nature which become fatal if included. There must be inspiration, enthusiasm, ambition, belief in fellow-men, faith in the cause of right, unselfishness, patience, and a fine appreciation of the relativity of values in the capital investments of life rather than those of a monetary nature, where dividends may become more real but less valuable to those who become real benefactors.

"I have always contended that Dr. Waugh could have more irons in the fire and take better care of them than any person I ever knew. The imprints of his early career left a guiding hand on his destiny, and as such Dr. Waugh has made a tremendous contribution to dentistry, orthodontics, and their serv-

ice to mankind. His work in orthodontic education through these formative years will last through the annals of history, to which he has contributed so much."

Dr. Dolce then introduced Associate Dean Maurice J. Hickey as the official representative of the University and the School of Dentistry. In his introduction Dr. Dolce very appropriately stated: "When Dean Hickey was first informed and asked for his approval of our plans, his cordial and wholehearted cooperation from the start almost bordered on the enthusiasm of the men on the Committee. We have been able to accomplish what we have with the assurance of having his complete support." In his response Dean Hickey not only spoke of Dr. Waugh's outstanding success in and through the Orthodontic Department but also in glowing terms spoke of his accomplishments as a Founder and guiding influence on the Faculty of the School of Dentistry and in the broader fields of dental education.

Dr. Dolce next introduced Dr. Totten as one of the men who had worked with our honored guest for many years as a teacher, and who for his fine and exceptional qualities was chosen to succeed Dr. Waugh as Director of Orthodontics in 1945. Dr. Totten then unveiled the plaque and spoke affectionately of his years of association with Dr. Waugh. He also mentioned how much he had missed him in person during the past seven years but stated that his guiding inspiration had always remained there just the same. He spoke also of the plaque as adding to the physical warmth of his presence and reviving much of the old spirit of former years.

Then rising to the pulse beats of the occasion Dr. Dolce announced, "Now Ladies and Gentlemen, it gives me the greatest pleasure to present to you our beloved and honored guest, Dr. Leuman M. Waugh." Dr. Waugh responded as follows:

"Chairman Dolce, Dean Hickey, Dr. Eby, Dr. Totten, and friends: The many kind things that have been said make me feel very humble, indeed. For all of this I am deeply grateful. While I know that I could not possibly deserve it all, I should be less than human were I to say that I did not like it. In a way, such exaggerations of one's virtues are sort of satisfactory because they serve as a buffer against the many knocks that almost everyone gets along life's highway that do not seem, to him, to be deserved.

"Lavish credit has been given me for the progress of the Orthodontic Department. May I assure you that it really was due to the loyalty and devotion of the members of the staff. Credit is due me only for having initiated the idea and for having persuaded Columbia to establish the Department. Dr. Frank T. Van Woert, then Director of the Dental Faculty, was my staunch supporter; his help was indispensable in presenting it to the Board of Trustees for official vote, by which the Graduate Department of Orthodontics was established.

"In 1916, when the Dental Faculty was formed, Dr. J. Lowe Young was elected Professor of Orthodontics and I was made Professor of Pathology for the time being. Dr. Young stated that he was too busy in practice to engage

in teaching. In 1917, when the first class enrolled, it became my duty to take over the Department, form my staff, and keep them working effectively and harmoniously together.

"The first instructor selected by me was Henry U. Barber, Jr., who then was associated with me in practice. We conducted an 'observation clinic' of about a dozen selected cases for demonstration to the undergraduate students. Dr. Barber took charge of the laboratory technic while I did the didactic work.

"Heavy were my burdens in those vexed years. Our original faculty was elected by a committee of fifty leading New York dentists who had campaigned for Columbia and who had been educated in a number of different dental schools, such as Pennsylvania, Harvard, the two New York City Colleges, Buffalo, Michigan and others. The large majority could not understand why I refused to allow undergraduate students to give orthodontic treatment as a requirement for graduation. It took several years to uproot the unsoundness of this idea and some, I am sure, were never fully convinced.

"In 1922, the teaching of graduates for specialization began. We then added Doctors James C. Allen and C. Sterling Conover to our little group. This staff, affectionately dubbed the 'A.B.C.'s of Orthodontics,' laid the foundation for the teaching clinic and carried on in the School of Dental and Oral Surgery at the 35th street building until 1927 when the dental and medical schools were moved to the present site. At this time, the staff was enlarged by the addition of Doctors Murphy, Totten and Callaway. Doctors Allan and Conover soon found the distance from their offices too great and asked to be relieved. They had done excellent work in our formative period and were very much missed.

"The leading problem encountered in the move to the present Medical Center in 1927 concerned the conduct of the Clinic. It was my firm conviction that on academic year—eight months—was not sufficient so we insisted, from the beginning, on a twelve-month or calendar year. This involved the summer vacation and we were adamant in our insistence that the Clinic must be conducted much as an enlarged private practice; that is, continuous service throughout the entire year and not with eight months of treatment and four vacation months of neglect. This meant that the Orthodontic Clinic must remain open during the summer and at the Christmas and Easter holidays, whether the other clinics were closed or not. This plan was approved. The course soon lengthened to fourteen months, and, a little later, to fifteen months, this being considered the equivalent of two academic years.

"The teachers who served faithfully with me from 1922 to 1945 were Henry U. Barber, Jr., James C. Allan, C. Sterling Conover, Edward G. Murphy, Axel L. Hanson, George S. Callaway, Arthur C. Totten, Donald B. Hutchinson, Frank E. Rians, Norman L. Hillyer, Herbert H. Ernst, Milton S. Tucker, Lewis E. Jackson, Eugene J. Kelly, William R. Joule, Walter A. H. Mosmann, Harry Galton, Donald B. Waugh, Glenn H. Whitson, William C. Keller, John J. Dolce, Wilbur J. Prezzano, James Jay, Brainerd F. Swain, Bernard H. Schanbam, Herbert E. Stollmack, John Mayers, and Paul Sexauer. Teachers from the basic sciences gave courses with orthodontic emphasis in their respective fields. Scientific research in orthodontic problems was engaged in as funds

would permit. Doctors Charles F. Bodecker, William Lefkowitz, Carl Breitner, and others contributed much in this field.

"The record would be sadly lacking were the 'distaff' side of the Department neglected. My secretaries, from 1922 to 1945, were the Misses Sylvia Fishman, Marion Barbuscia, Eugenia Somma, Helen Marshall, Margaret Weil, Rose Krikorian, and Mrs. Hawkes. It was their duty to collect and record clinic fees to be transferred to the Bursar's office, to supervise the staff of hygienists assisting in the Clinic, to keep the scholastic records of the graduate students, and to attend to all other clerical work connected with the Department.

"Miss Neva Woolford, who had charge of the teaching of cast finishing, photography, and the processing of radiograms, was most competent and served for many years. Miss Emily Rogers was a very able dental assistant of long service. Over a period of years, Mr. Joseph Lupo ably assisted Mr. Hanson in the laboratory.

"Time will not permit the mention of all of the dental hygienists who gave faithful attention to their duties. Dr. Anna V. Hughes, who was in charge of our School of Oral Hygiene, always saw to it that I had most capable chair

assistants. We endeavored to function as one happy family in serving the hundreds of needy children, regardless of color, creed, or social cast, with the consciousness that they all were God's children. All were given as faithful care as though they were members of our own families.

"In developing the Department, it being a pioneer effort, we had no precedent to guide us. We, therefore, had to studiously blaze our trail. In 1925, we offered the first short course for orthodontists given under university discipline, with Dr. John V. Mershon as its director. Some thirty orthodontists were approved for enrollment. The course was an unqualified success. Twenty-five similar courses in the growing field of Orthodontics followed up to the time of my retirement in 1945. The orthodontic leaders who gave these courses were John V. Mershon, B. E. Lischer, Milo Hellman, Robert H. W. Strang, Charles H. Tweed, Joseph E. Johnson, and Joseph D. Eby. Assistance was ably given by Henry U. Barber, Jr., John Ross, Franklin Squires, Ashley Howes, Clare Madden, John Dolce and George Crozat.

"Teaching, like all else that is worthwhile, entails sacrifice and, in proportion, reaps reward. One teaches either for what he can give or, selfishly, for what he can get. He who sacrifices most reaps the richest reward, which is the devotion of his students and the approbation of his professional colleagues.

"A reward such as you have bestowed upon me today is beyond anything of which I could have dreamed. A plaque, fashioned in enduring bronze and placed in the Department which I founded, submerges me in a whirl of emotion which leaves me without words to express the depth of my gratitude.

"To you who studied with me, this plaque may serve as a reminder of happy days of studentship together. To those who follow, may the *fellowship* expressed in this plaque serve as an inspiration to carry our chosen profession ever onward.

"To him who conceived this testimonial, to the committeemen who must have worked long and hard, to all who took part in making it come true, and to all here assembled, may I borrow the simple words of Tiny Tim,—'God bless you, every one.'"

Dr. Waugh was then presented with a quarter size bronze duplicate of the plaque, and a scroll which read: "Presented to Leuman Maurice Waugh, in grateful appreciation by his former students, associates and colleagues.

John Dolce, Chairman

Joseph Eby — Irving Grenadier
John Mayers — Edward Murphy

Clinton Van Natta

June eleventh, nineteen-hundred-fifty-two"

The scroll also contained the 149 names of those who had participated in this honor to their friend and benefactor. Dr. Waugh has personally autographed a 5 by 7 brown sepia print for each participant.

Refreshments were served in the Clinic, and thus brought to a conclusion a happy Alumni Day, climaxed by a most appropriate, beautiful, and richly befitting tribute to Leuman Waugh.

J. D. E.

Editorial

Mail Order Orthodontics

NOW is a good time to recall to mind that at the 1951 meeting of the American Association of Orthodontists a resolution was passed in regard to complaints pertaining to orthodontic laboratory advertising. The resolution provides that all complaints pertaining to laboratory advertising should be channeled through the chairman of the Public Relations Committee of the American Association of Orthodontists. The Public Relations Chairman, Dr. Fred Aldrich, of Columbus, Ohio, has been directed to forward any complaints to the Federal Trade Commission which he may deem worthy of the attention of the Commission.

The complaint by the Federal Trade Commission against the American Association of Orthodontists was settled Nov. 24, 1952, when the Association agreed to a consent order. The Commission had charged that members of the American Association of Orthodontists had violated fair trade laws in asking publishers of dental publications to delete certain dental laboratory advertising of orthodontic appliances. The American Association of Orthodontists contended that its members were acting to protect the public's dental health by opposing advertising which was not considered in the best interests of public health. The Association, in agreeing to the consent decree, neither admitted nor denied the allegations of the Commission. The Association's lawyers, Dargusch, Caren, Greek, and King, of Columbus, Ohio, pointed out that it had adopted the above resolution and that "the Federal Trade Commission, and not the individual members of the American Association of Orthodontists, is left to determine whether or not certain types of advertising are unfair."

Orthodontists plainly have no quarrel with orthodontic appliance fabricators as long as they stick to their own craft of mechanics and do not make claims to be able to service orthodontic cases by diagnosis and advice to the dentist in treatment of patients. The appliance department of orthodontics seems to spotlight practically all of the misunderstanding that orthodontics seems to be receiving from various sources.

For many years members of the dental profession have protested the routines of some orthodontic laboratory technicians who invade the treatment, diagnostic, and educational fields of the orthodontic department of dentistry. Such proposals are so out of step with the problem in hand that it is little wonder that dentists protest such practice as being a reflection in the field of dental education and dentistry in general.

Those who are well trained in orthodontics assume no treatment without a personal examination of the patient. Men of experience undertake no orthodontic treatment based on laboratory diagnosis alone and with appliances planned by a dental laboratory from only plaster of Paris casts of the mouth. The personal examination of the patients is of the essence in all cases and highly essential.

The subject of orthodontic appliances of laboratory origin was ably discussed in the *New York Journal of Dentistry,* February, 1939, vol. 9, pp. 56-59, by Dr. Leuman Waugh, of New York. He said: "An orthodontic appliance is not a passive harmless thing in the mouth. It must result either in good or harm so long as it is worn. The dentist, and not the laboratory, is responsible to the patient, and the outcome depends wholly on the ability of the practitioner." He further went on to state: "Orthodontic appliances are only one of the seven recognized agencies in treatment. They should be used only when imperative, and then worn for as short a period as is possible to produce satisfactory results."

Dentists are not impressed by literature sent out by laboratories. Some of it even suggests teeth to extract in the treatment of cases.

Laboratories should direct their attention to the fabrication of appliances according to the prescription of the dentist, and as required in some states by law. That is their field and there it should end. And to that field the dental profession will no doubt give its full cooperation.

Parents who have children undergoing meticulous orthodontic treatment have the right to know if the dentist doing the work depends on the counsel and advice of laboratory technicians to bring about treatment.

Read the information beamed to the dental profession in the mails and you will ask yourself: "What is orthodontics, a health service or a trade dealing in buying mechanical merchandise?" After all, here is a job for the teachers in orthodontic departments in dental schools. If a dentist is properly trained and briefed in his orthodontic course, propaganda beamed at him suggesting help to direct his treatment will "fall flat." The whole process of what is well known as "Mail Order Orthodontics" is not in the public interest or in the interest of the dental profession, and is not in step with the entire concept of education in any department of health services.

H. C. P.

Reports

REPORT OF THE PUBLIC RELATIONS COMMITTEE, AMERICAN ASSOCIATION OF ORTHODONTISTS, 1952

DURING the past year the Public Relations Committee has endeavored to act as a clearinghouse for any complaints pertaining to public relations that might arise in the sectional societies. We are happy to state that these complaints are at a minimum. Because of this fact, it was decided that it would not be necessary to hold a special public relations meeting of the sectional chairmen of the societies at our annual meeting this year.

The 1951 annual report was published in the August issue of the AMERICAN JOURNAL OF ORTHODONTICS. In this report a request was made that all complaints should be cleared through the Chairman of the Public Relations Committee of the American Association of Orthodontists. We also sent a copy of this report to the public relations chairman of each sectional society requesting him to read the report at the next meeting of the sectional societies.

We feel that two things of importance have been accomplished:

First, so far as your Chairman knows, there have been no letters of complaint written to any dental journal during the past year by individual members of the Association, thus allowing us as an organization to function more smoothly in our relationship with the Federal Trade Commission.

Second, if there were complaints, they could be placed in the proper channels for correction.

As in previous years, there have been a great many letters from high school students throughout the country requesting information pertaining to orthodontics which have been taken care of routinely. We also received a number of letters requesting information from public health workers throughout the country. The following is typical of a letter which we received from your secretary. The supervisor of nurses in the City Health Department in East Orange, N. J., wrote stating that the City Health Department carries on a dental program in four parochial schools and a preschool dental clinic once a week in the City Public Health Department which necessitates them being brought up to date in the field of orthodontics. The last pamphlet she was able to obtain was printed in 1940 entitled "Facts About Orthodontics for Health Workers."

Officially, the American Association of Orthodontists has no literature which can be used by various health organizations for health educational purposes. The committee feels that information pertaining to orthodontics should originate in the American Association of Orthodontists in addition to the federal government. Your committee has made a careful check with your secretary on this matter and finds there are no recent official data; therefore, your committee recommends that:

1. A suitable pamphlet or brochure be printed giving some of the historical background of the American Association of Orthodontists and the educational

requirements necessary to enter the field of orthodontics, which could be given to the various high school students requesting information pertaining to our profession.

2. Pamphlets or brochures be printed for use by public health nurses in the various dental clinics throughout the country, which, of course, would include information as to the recognition of orthodontic defects, the time treatment should be started, as well as what can be accomplished by orthodontic treatment.

If the Board of Directors of our Association feel that this is worth while, a nominal sum should be set aside for the printing of these pamphlets.

Respectfully submitted,
G. Hewitt Williams,
Frank P. Bowyer,
Frederick R. Aldrich, Chairman.

REPORT OF THE COMMITTEE ON RESEARCH, AMERICAN ASSOCIATION OF ORTHODONTISTS, 1952

THE committee began to publicize the 1952 research session and the prize essay contest immediately after the close of the 1951 meeting at Louisville, Ky. These features of the committee's work were conducted separately. This year the program of the research session was under the supervision of Dr. John R. Thompson. The chairman of the committee wishes to acknowledge with thanks the excellent work of Dr. Thompson in preparing an interesting and well-balanced research session.

While contributions to the prize essay contest were slow in reaching the committee, the response was most encouraging as the deadline approached for submitting prize essay entries. The committee was able to choose a prize essay for presentation at the 1952 meeting and honorable mention was awarded to two other essays.

The prize essayist in 1952 was Robert Murray Ricketts, D.D.S., M.S., Instructor in Orthodontics, Department of Orthodontia, University of Illinois; Instructor in Orthodontics, Cleft Palate Training Program, Division of Services for Crippled Children, University of Illinois. The title of his essay is, "A Study of Changes in Temporomandibular Relations Associated With the Treatment of Class II Malocclusion (Angle)."

Honorable mention awards go to the following:

William A. Elsasser, Senior Assistant Dental Surgeon, Division of Dental Resources, United States Public Health Service. The title of his essay is, "Orthometric Analysis of Facial Pattern."

Alvaro Cardoso Henriques, D.D.Sc., D.D.S., M.Sc.(Dent.), Instructor, Thomas W. Evans Institute School of Dentistry, University of Pennsylvania. The title of his essay is, "The Growth of the Palate and the Growth of the Face During the Period of Changing Dentition."

On suggestion from Dr. Bernard deVries and Dr. Max Ernst that the research program be more closely integrated with the scientific program of the annual meeting of the Association, it was decided to hold the research session on Tuesday morning and to have the prize essay read at the close of the research session.

A number of problems in relation to the work of the Research Committee still remain unsolved. Among these may be listed the following:

1. A wider distribution of research reports. The reports presented at the research sessions at present consist mainly of work in progress at a small number of dental schools which provide postgraduate training in orthodontics. More contributions should be encouraged from clinics, private practitioners, and from workers in other fields whose researches have a direct or closely related bearing on orthodontics.

2. The committee should be prepared to offer more guidance to contributors in the preparation of reports.

3. Because of the small number of men on the committee, members of the committee frequently find themselves in the embarrassing position of having to judge papers submitted by workers in their own university departments.

In order to deal with the aforementioned problems the committee recommends:

1. The committee be enlarged to include five members, one new member to be elected annually.

2. The committee should organize its work so as to overcome the problems mentioned in the foregoing.

Respectfully submitted,
ROBERT E. MOYERS,
JOHN R. THOMPSON,
J. A. SALZMANN, Chairman.

In Memoriam

ELMER S. LINDERHOLM

1898-1952

ELMER S. LINDERHOLM was born in Alamosa, Colo., and received his degree in dentistry from the University of Denver.

Prominent in club activities, Dr. Linderholm was past president of the Rocky Mountain Society of Orthodontists, as well as a member of the local and state dental societies. He was also a member of the American Dental Association. He was past-secretary of the Denver Summer Seminar and was serving as a director. He held membership in the Psi Omega Dental Fraternity. He was past master of the Durango Lodge No. 46, A. F. & A. M., a member of the Rocky Mountain consistory No. 2, the El Jebel Shrine, and past commander of the American Legion at Durango. He also was a member of the Disabled American Veterans and was a retired lieutenant colonel in the air force.

He died suddenly on Nov. 2, 1952. His funeral was held in Denver on Wednesday, November 5. He is survived by his wife, Gladys Friedman Linderholm, of Denver; a son, C. Stafford Linderholm, of Wiggins, Colo.; his mother, Mrs. Hulda H. Linderholm, of Alamosa, Colo.; two brothers, Walter E., of Mancos, Colo., and Carl T., of Aiken, S. C., and one grandson.

Our profession has lost a valued member. As one of our members so aptly expressed it, "Here was a man who lived by the Golden Rule."

ANTHONY GEORGE MILLER, SR.

1898-1952

Anthony George Miller, Sr., was born in Erie, Pa., and attended public schools there until 1916, at which time he came to Georgetown University, Washington, D. C. After attending Georgetown College he enlisted in the Medical Corps of the United States Army in March of 1918. Upon discharge he entered Georgetown University Law School and then transferred to Georgetown University Dental School, where he graduated in June of 1923. On graduation he began teaching in the operative department of that school while carrying on private practice. From 1935 to 1937 he took postgraduate work in orthodontics and began to practice this specialty exclusively and at the same time became head of the Orthodontic Department of Georgetown University Dental School, remaining until 1942, at which time he then devoted his entire time to his practice of orthodontics. In September, 1947, he became ill and retired from active practice. Dr. Miller was an active member of the District of Columbia Dental Society, a past postgraduate clinic chairman, and a member of the following

societies: American Dental Association, American Association of Orthodontists, Southern Society of Orthodontists (active), Northeastern Society of Orthodontists (nonresident), Washington-Baltimore Society of Orthodontists, and the International College of Dentists.

Dr. Miller was married to the former Helen Bernadette Lennon on Nov. 10, 1923, in Washington, D. C. In addition to Mrs. Miller, survivors include a son, Dr. Anthony G. Miller, Jr., and two daughters, Mrs. Rosemary H. Cotton, and Eileen Ann Miller, now attending college.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Abstracts Presented Before the Research Section of the American Association of Orthodontists, April 23, 1951

A Cephalometric Radiographic Study of a Correlation of the Occlusal Vertical Dimension and the Rest Vertical Dimension of the Face in Various Age Groups of Individuals: By Philip J. Bright, D.D.S., M.S.D., Northwestern University Dental School, Chicago, Ill.

1. Arithmetic means were established for the size of the interocclusal clearance in two age groups of individuals possessing excellent occlusions. They were determined as follows:

Mixed dentition group, 4.24 mm.
Young adult group, 3.31 mm.

2. The comparison of the means of the above age groups indicates that there is a significant difference in the size of the interocclusal clearance between these dissimilar groups.

3. The comparison of a previous investigation of the mixed dentition with the mixed dentition group of this study indicates that no difference in the size of the interocclusal clearance exists between these similar age groups.

4. The comparison of a previous investigation of an adult group with the young adult group of this study indicates that there is a significant difference in the size of the interocclusal clearance between these dissimilar age groups.

5. There was no significant difference between the three registrations of the rest position for the mixed dentition group and for the young adult group.

6. The three registrations of the rest position were quite consistent for each individual.

A Radiographic Study of the Position of the Mandibular Condyle in Individuals Possessing Malocclusion of the Teeth Before and After Orthodontic Treatment: By Chester R. Glowacz, D.D.S., M.S.D., Northwestern University Dental School, Chicago, Ill.

1. The paths of closure of the mandible from rest position to occlusal position that appeared to be abnormal disclosed an improvement toward the normal (hinge movement). In most instances detectable amounts of mandibular displacement in Class II, Division 1 malocclusion cases as shown by temporomandibular joint radiographs either completely disappear or appreciably improve during orthodontic treatment.

2. Orthodontic treatment of Class II, Division 1 cases (Angle) with a posterior-superior mandibular displacement does not appreciably affect the occlusal position of the mandibular condyle.

3. Usually there is no apparent change in the rest condylar position during orthodontic treatment of Class II, Division 1 cases showing normal condylar movement from rest position to occlusal position.

4. In most cases the reduction of mandibular displacement (posterior) during orthodontic treatment is accompanied by a permanent forward repositioning of the occlusal position of the body of the mandile. It is difficult, however, to differentiate between mandibular repositioning and mandibular growth.

5. In most cases the reduction of mandibular displacement during orthodontic treatment is accompanied not by a permanent forward repositioning of the occlusal position of the condyle but rather a change of the rest condylar position.

6. The apparent change in the rest condylar position during orthodontic treatment when it does occur is probably associated with growth changes.

7. The results of this study should not be misinterpreted to imply that "jumping of the bite" or repositioning the mandible anteriorly to its normal position is feasible. Furthermore, it is probable that mandibular repositioning and mandibular growth are interrelated.

A Cephalometric Radiographic Investigation of the Skeletal Pattern of a Specific Dental-Facial Anomaly: By Warren E. Gerber, D.D.S., M.S.D., Northwestern University Dental School, Chicago, Ill.

1. The following facial skeletal anthropometric measurements differed significantly from those of normal control groups:

a. The angle NS-GoGn was significantly larger in the experimental sample.

b. The angle N-S-Gn was also significantly larger in the experimental sample.

c. The angle S-N-Gn was significantly smaller in the experimental sample.

d. The angle S-N-b was significantly smaller in the experimental sample.

e. The S-N-a, S-N-b difference was significantly larger in the experimental group.

f. The OP and Mand. Pl. angles were significantly larger in the experimental sample.

2. There appears to be a positive correlation between the angles NS-GoGn, and Mand. Pl. Likewise, a negative correlation seems to exist between the angles NS-GoGn, N-S-Gn, Mand. Pl., and the angle S-N-Gn.

3. Syndrome cases present varying degrees of disturbed facial balance which appear to be directly associated with a large mandibular angle (condylar angle) a retrusiveness of the chin point, and an open-bite.

4. The syndrome seems to be associated with an increase of anterior face height and a decrease in posterior face height.

5. Temporomandibular joint disturbance could not be definitely associated with the syndrome but since some of the cases experienced a disturbance of joint function, this area should always be considered during functional analysis.

6. With the exception of the open-bite the articulated dental casts did not conclusively reveal any characteristic difference between syndrome cases and the average case.

7. No definite hypothesis could be formulated from the case history data or statistical data concerning the morphology or physiology of the syndrome. However, it was considered feasible that the facial pattern of syndrome cases could be the result of either acquired or hereditary growth influences.

8. For convenience of discussion the associated subjective and objective characteristics of the anomaly investigated have been referred to as a syndrome. It is suggested that they be considered and accepted as a syndrome.

A Radiographic Method of Analysis of the Structures of the Lower Face to Each Other and to the Occlusal Plane of the Teeth: By Robert S. Freeman, D.D.S., M.S.D., Northwestern University, Chicago, Ill., and **A Radiographic Method of Analysis of the Relation of the Structures of the Lower Face to the Maxillary Plane:** By Dale F. Rasmusson, D.D.S., M.S.D., Northwestern University, Chicago, Ill.

The purpose of this study was twofold:

1. To test the reliability of making cephalometric appraisals of the lower face as an aid in the evaluation of orthodontic cases.

2. To devise a simple method of taking oriented roentgenograms of the area of the lower face with the dental x-ray machine which may also be readily adaptable to the average orthodontic office.

In this study 170 lateral roentgenograms of individuals with teeth in occlusion were investigated. Emphasis was placed upon the interpretation of the relation of the facial elements to one another.

In order to express anteroposterior relation of the mandible to the maxilla, it is first necessary to find a common horizontal line or plane of reference. Frankfort horizontal was used and studied as this plane. Points *a* and *b* were used as being representative of the anterior borders of the apical bases. Therefore, by constructing the angle *axb*, this relationship was measured and recorded in numerical values in the normal and malocclusion groups.

Other relationships of the facial elements were investigated such as the long axis of the maxillary incisors and the mandibular incisors to the maxillary, occlusal, and mandibular planes. The relation of the anterior apical base line, line *ab*, was also investigated in its various angular relationships to the maxillary, occlusal, and mandibular planes. Linear measurements were also made to determine incisor and alveolar prognathism and vertical and horizontal overbite. Mean values are given to express central tendencies of the various normal and malocclusion groups. The figure standard deviation indicates that 68 per cent of the cases within the group investigated fall within this variable range of the arithmetic mean. It also gives an expression of individual variability within that particular group.

A portable head-holding device was designed and constructed to be adaptable to the dental chair and for use with the dental x-ray machine. The apparatus was designed to be space-saving, inexpensive, and adaptable to the average orthodontic office.

The subject was oriented in the head holder in much the same manner as with the Broadbent-Bolton cephalometer. Ear rods and an orbitale marker were used to orient the head to Frankfort horizontal. The film was held in a cassette and holder at the left side of the head. The head of the x-ray machine was positioned at the right side of the subject by an extension arm of the head holder. The target-film distance was 36 inches. The milliamperage was increased from 10 to 15 to increase the penetration, and an exposure time of 4 to 4.5 seconds was used for adults. The film size was 4 by 5 inches and included the area of the lower face.

Statistical determination indicated that the possible error in the method using the portable head holder was not greater than the method using the Broadbent-Bolton cephalometer.

SUMMARY

Restricting the cephalometric analysis to the structures and planes of the lower face produces results that are equally as reliable as those from an 8 by 10 inch roentgenograph of the entire head.

Satisfactory extraoral radiographs of the lower face can be taken with a 4 by 5 inch film using a portable head positioner and a dental x-ray machine. The patient can be accurately reoriented for successive radiographs, and the angular and linear measurements (used in this study) made from the 4 by 5 inch radiographs can be compared directly to those from an 8 to 10 inch radiograph.

This study produced a technique that is inexpensive to install, economical to operate, requires no additional space, and furnishes the orthodontist with accurate information for diagnostic purposes that will be of equal value to that obtained by present cephalometric methods.

A Study of Tooth Size, Dental Arch Length, and Facial Balance in Cases of Class I Malocclusion: By Irving J. Fleet, D.D.S., M.S.D., Northwestern University Dental School, Chicago, Ill.

1. The size of the teeth in cases of Class I malocclusion with crowding appears to be slightly larger than average values for tooth size as determined by previous investigators.
2. In both maxilla and mandible no significant correlations between the size of the teeth, nor the length of the arches, and the amount of crowding were obtained.
3. The amount of crowding appears to be a function of the interaction of both variables, the size of the teeth and the length of the arch, as evidenced by correlating the ratio of tooth size to arch length with the amount of crowding.
4. Facial balance, as measured by the linear distance of 1 to NP and by the angle of inclination of the central incisors, 1 to NS, appears to vary inversely with the amount of crowding in the cases studied.
5. The mechanism by which facial balance varies inversely with the amount of crowding in cases of Class I malocclusion has been explained as a partial compensation by the teeth for discrepancies between tooth material and bony support.

Growth of the Upper Face Following Bilateral Mandibular Condylar Resection*: By Joseph R. Jarabak, D.D.S., M.S.D., and T. M. Graber, D.D.S., M.S.D., Ph.D., Northwestern University Dental School, Chicago, Ill. (Read by T. M. Graber.)

A study of the growth of the upper face of the rat following bilateral resection of the mandibular condyles was made. For the purposes of linear and angular appraisal, cephalometric roentgenograms were taken of the occlusal and lateral aspects of the skull. The resection was performed on 30-day-old rats. They were subsequently x-rayed six weeks, twelve weeks, eighteen weeks, twenty-four weeks, twenty-six weeks, and thirty weeks following resection.

The cranium was divided into two parts at the presphenoidal suture, the anterior portion comprising the face and the posterior, the brain case.

There was an increase noted in the height of the face of the operated rats from the occlusal surface of the upper molar to the apex of the ethmoid bone. This increase may be attributed to the change of the occlusal plane following resection. The angle of the occlusal plane increased 4½ degrees (14 degrees control to 18.5 degrees experimental).

No change was noted in the angular measurements of the snout following the resection.

*This work is supported in part by United States Public Health Grant No. D32(C2) in the departments of anatomy and orthodontics.

The Regeneration of the Mandibular Condyle Following Bilateral Resection*: By Joseph R. Jarabak, D.D.S., M.S.D., Northwestern University Dental School, Chicago, Ill. (Read by Joseph R. Jarabak.)

A histologic study was made on the structure of the regenerated area of the mandibular condyles of the rat. The condyles were resected bilaterally on rats 30 days old. Specimens were taken at twelve days, thirty-six days, fifty days, and seventy-eight days after resection. In the first group, the area on the neck immediately below the resection showed a number of empty lacunae. There was extensive osteoblastic activity noted below the area mentioned. The region above the section was composed of an atypical mass with a few cartilage cells and an atypical fibrous structure extending to the remnants of the remains of the articular capsule.

In the specimen taken thirty-six days after resection, the callus began to form definitive areas of cartilage extending from the neck of the condyle to the fossa.

In the fifty-day specimen the cartilage cells appeared along the superior aspect of the modified or reformed condylar surface with a new formation of cancellous bone below.

In the seventy-eight day specimen, the cartilage layer was very thin with extensive formation of cancellous bone. There were also irregular areas in the cartilage which were being invaded by osteoblasts and capillaries from the cancellous bone.

The regenerative process of the mandibular condyle seems to simulate the repair of a fracture of an endochondral bone.

Growth of the Mandible of the Rat Following Bilateral Resection of the Mandibular Condyles*: By Joseph R. Jarabak, D.D.S., M.S.D., and John R. Thompson, D.D.S., M.S., Northwestern University Dental School, Chicago, Ill. (Read by John R. Thompson.)

The purpose of this investigation was to determine how much condylar growth contributes to the growth of the mandible. A series of measurements were made upon serial cephalometric roentgenograms over the growth period of the rat following bilateral resection in accordance with the technique reported by Jarabak and Thompson. Ramus height cannot be appraised because the superior extremity of the ramus, the condyle, has been removed. The length of the body of the mandible was determined from the distal spine of the angle, posteriorly, to the superior alveolar crest of the lower central incisor. This measurement was not affected by the resection. The height of the ramus from the coronoid tip to the angle of the mandible is greater by approximately 2 mm. in the resected mandibles of the fully grown rats as compared with their litter mate controls. The notch along the inferior border of the mandible increased in depth 2 mm. over that of the control.

The observations indicate that although there may be local changes in the configuration of the mandible, the over-all measurements of the body length and ramus height are not perceptibly altered by the resection of the condyles of the rat.

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*This work is supported in part by United States Public Health Grant No. D32(C2) in the departments of anatomy and orthodontics.

Changing Philosophies of Cleft Palate Management: By T. M. Graber, D.D.S., M.S.D., Ph.D., Northwestern University Dental School, Chicago, Ill.

Cleft palate individuals as a group show deficient patterns of maxillary growth, laterally, anteroposteriorly, and vertically. Early and traumatic surgery results in the greatest deformity. There is a positive correlation between the number of operations, the amount of scar tissue, and the degree of insult. To minimize interference with growth centers, it seems advisable to postpone surgical correction at least until the end of the fourth year of life, when five-sixths of the total maxillary width has been accomplished. However, it must be remembered that downward and forward growth, which depends primarily on the spheno-occipital synchondrosis and sutural activity, continues until 20 years of age. It appears that the surgically repaired palate grows more slowly than the surrounding soft tissue. This results in increasing functional difficulty and ultimate structural inadequacy. Patients whose palatal clefts have not been surgically manipulated show a pattern of maxillary growth that is essentially normal. Closure of nonoperated clefts by prostheses seems quite successful, if judged by the general intelligibility of speech and ease of mastication and deglutition. Rehabilitation requires the coordination in one organization of all the skills and knowledge peculiar to the cleft palate problem. Only by grouping services and correlating information and ideas can each man render the fullest value of his particular field.

A Quantitative Study of the Facial Areas From the Profile Roentgenograms and the Relationships to Body Measurements (a project undertaken at the University of Minnesota School of Dentistry): By Gerald J. Rose, B.S., D.D.S., M.S.D., Washington, D. C.

The general object of this cross-sectional study is to measure the facial areas quantitatively and compare the growths of the various facial areas (as seen on the oriented profile roentgenograms) with that of certain body measurements and to determine the interrelationships of the facial areas.

The investigation is based on the parapuberal period, when many changes in the body are taking place, and is also the period when the major part of the dentition is completed.

A division was made between premenarchial and postmenarchial females.

The facial areas were based on those of Brodie with several modifications.

The facial boundaries of the present study enclosed those areas where growth demarcation seemed reasonable and consisted of points and outlines easily identifiable on the x-ray.

The facial areas were:

1. Orbito-ethmoid.
2. Total maxillary (a combination of maxillary corpus and superior alveolar).
3. Mandibular areas (a combination of inferior alveolar and mandibular corpus).

Areas:

1. Orbito-ethmoid—designed to include the orbit and more specifically to exclude it from growing facial area beneath it.
   (a) nasion to center sella turcica
   (b) sphenoethmoidal junction to superior point of pterygomaxillary fissure
   (c) most forward boundary of orbit as seen on roentgenogram
   (d) to inferior border orbit

2. Total maxillary area:
   (a) anterior border pterygomaxillary fissure around the maxillary tuberosity to encompass any crowns
   (b) irregular line drawn along anterior margin facial skeleton including tip of central incisor
   (c) smooth curve through incisal tip central and first molar cusps
3. Mandibular areas:
   (a) straight line from gonial angle to intersection of occlusal curve
   (b) tracing of remainder of mandible

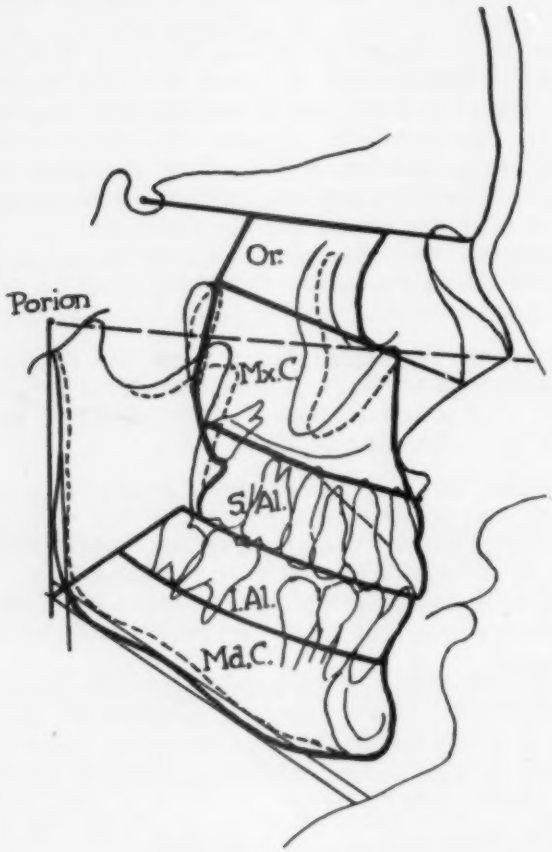

Fig. 1.

The 125 headplates of this series were chosen by random sampling and divided into:

50 males
50 premenarchial females
25 postmenarchial females

After tracing, each area was measured with a planimeter. This device automatically computes the area of an irregularly shaped flat surface with great accuracy.

The comparisons were made by rank correlation with each dimension being compared with each of the other dimensions.

The carpal assessment was accomplished by ranking of wrist x-rays.

Findings:

1. Chronological age proved an ineffective guide to the growth and development of facial areas in the parapuberal period.
2. Measure of carpal rank also proved an ineffective guide to facial development.
3. Stature and body weight proved the best indicators of facial development found in this study. Both show distinct concomitance with facial growth during this period.
4. A particularly close concomitance exists between the total maxillary area and mandibular areas in the three groupings.
5. Orbito-ethmoidal area shows little if any relation to other facial areas or to stature, body weight, or age increase.
6. There is a distinct difference in size of facial areas in favor of males when compared to premenarchial females.
7. Menarchial status seems to have a marked effect on the size of the total maxillary and mandibular areas; critical ratios indicate that this is not entirely due to increased chronological age.
8. Relative rates show that all facial areas are undergoing a reduction in percentage increase in this period.
9. The orbito-ethmoidal area grows quite differently from the total maxillary and mandibular areas and its style of growth may be said to approach the neural type. Its inclusion as a typical facial area is most questionable.
10. Fourteen empirical formulas were developed for expressing the growth of facial areas.

In closing, I should like to acknowledge the help and advice given by Drs. Richard Scammon and Sherwood Steadman in carrying out this study.

Alizarin as an Indicator of Bone Growth*: By Joseph R. Jarabak, D.D.S., M.S.D., and LeRoy Vehe, M.D., Northwestern University Dental School, Chicago, Ill.

Twenty-five rats were divided into 5 groups of 5 rats. The first group were 30 days old, the second, 60, the third, 120, the fourth, 180, and the last, 260 days old. All of the groups were given, intraperitoneally, a single dose of a 2 per cent isotonic solution of alizarin red S on the basis of 100 mg./kg. body weight. The rats were sacrificed by decapitation on the next day, and the skulls were boiled in 10 per cent solution of NaOH until the tissue was removed.

In the first group all of the skulls were very diffusely stained. The second group began to show selective staining in the mandible, maxilla, zygomatic arches and sutures. In the third group the staining localized in the same areas as in the second group; however, the stain was very faint. In the fourth group the staining was very light on the outer surface of the zygomatic arch in the cranial sutures, and along the inferior border of the mandible. The staining extended along the masseteric line to the distal border, from the mandibular angle and to the head of the condyle. In the last group there was no staining.

Another group of five rats 260 days old were given a 4 per cent solution or 200 mg./kg. body weight. The skulls indicate selective staining equal in density to that of the 60-day-old rat skulls in the first group.

This experiment indicates that alizarin in sufficient amounts will stain bone in identical areas irrespective of age.

*This work is supported in part by United States Public Health Grant No. D32(C2), departments of anatomy and orthodontics.

Radiocalcium Uptake as Compared With Alizarin in the Mineralization of Bone*: By Joseph R. Jarabak, D.D.S., M.S.D., Northwestern University Dental School, Chicago, Ill.

Six rats, aged 31, 192, and 306 days, were divided into two groups. One rat at each age level was given a 2 per cent solution and the other rat was given a 4 per cent solution of alizarin red S intraperitoneally. The dosage was computed on the basis of 100 mg./kg. body weight for the 2 per cent solution and 200 mg./kg. body weight for the 4 per cent solution. Two hours later the rats were given 40 microcuries of radiocalcium (^{45}Ca)/100 grams of body weight, intraperitoneally.

The animals were sacrificed by decapitation three hours later, and the heads were boiled in 10 per cent solution of sodium hydroxide until the skulls were free of tissue.

The skull of the 31-day-old rat showed deep staining with the 2 per cent solution and very diffuse staining with the 4 per cent solution of alizarin red S.

The skull of the 192-day-old rat which was given the 2 per cent solution showed very faint staining along the superior lateral margin of the zygomatic arch, in the sutures and along the alveolar margins. In the mandible a similar staining appeared along the inferior border, the alveolar process, and the surface of the condyle. The 4 per cent solution gave good selective staining in the areas just described. In the skulls of the 306-day-old rats, there was no visible staining with the 2 per cent solution and faint staining with the 4 per cent solution.

Sagittal and cross sections of the skulls and mandible indicate that there is an uptake of calcium in all of the areas indicated by the alizarin. Although there was no staining with the 2 per cent solution of alizarin in the skull of the 306-day-old rat, the calcium uptake was in the areas previously described for the alizarin. Although alizarin has been recognized as an indicator of bone mineralization, its sensitivity is not comparable with radiocalcium (^{45}Ca).

*This work is supported in part by United States Public Health Grant No. D32(C2) in the departments of anatomy and orthodontics.

News and Notes

American Association of Orthodontists

A session for the presentation of abstracts of research studies will be held during the next meeting of the American Association of Orthodontists to be held at the Baker Hotel in Dallas, Texas, on April 26 to 30, 1953.

The titles, authors' names, and applications, should be submitted to Dr. John R. Thompson, 311 East Chicago Ave., Chicago, Ill., before March 15, 1953, in order to be included in the official program.

Prize Essay Contest, American Association of Orthodontists

Eligibility.—Any member of the American Association of Orthodontists; any person affiliated with a recognized institution in the field of dentistry as a teacher, researcher, undergraduate or graduate student shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain some new significant material of value to the art or science of orthodontics.

Prize.—A cash prize of $500 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if in its judgment none of the entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published. All other essays will be returned.

Specifications.—All essays must be typewritten on 8½ by 11 inch white paper, double-spaced with 1 inch margins, and composed in good English. Three copies of each paper, complete with illustrations, bibliography, tables, and charts must be submitted. The name and address of the author must not appear in the essay. For purposes of identification, the author's name, together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity and status (practitioner, teacher, student, research worker, etc.), should be typed on a separate sheet of paper and enclosed in a sealed envelope. The envelope should carry the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held at the Baker Hotel, Dallas, Texas, April 26 to 30, 1953.

Judges.—The entries will be judged by the Research Committee of the American Association of Orthodontists.

Final Submission Date.—No essay will be considered for this competition unless received in triplicate at the following address on or before March 1, 1953: Dr. J. A. Salzmann, 654 Madison Ave., New York 21, N. Y.

ROBERT E. MOYERS, Chairman, Research Committee,
American Association of Orthodontists,
230 College St.,
Toronto 2 B, Canada.

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Baker Hotel, Dallas, Texas, April 22 to April 26, 1953. Orthodontists who desire to be certified by the Board may obtain application blanks from the secretary, Dr. C. Edward Martinek, 661 Fisher Bldg., Detroit 2, Mich. To be considered at the Dallas meeting, all applications must be filed before March 1, 1953.

Local Committees for Dallas Meeting of American Association of Orthodontists

LOCAL ARRANGEMENTS

Tom M. Williams, Chairman
Medical Arts Bldg.
Dallas, Texas

Frank Roark, Treasurer
4150 Mockingbird Lane
Dallas, Texas

Bibb Ballard
A. B. Conly
W. Harrel Delafield
Joe Favors
Nathan G. Gaston
Robert E. Gaylord
G. A. McJimsey
Julius Tomlin
Horace E. Wood
William M. Younger

REGISTRATION

Franklin A. Squires, Co-chairman
W. Harrel Delafield
G. A. McJimsey
Frank Roark

Bibb Ballard, Co-chairman
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Horace E. Wood

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Horace E. Wood, Chairman

S. D. Terrell

G. C. Turner

RECEPTION

W. Harrel Delafield, Chairman

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Walter Lipscomb

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LADIES ENTERTAINMENT

A. B. Conly, Chairman

W. Harrel Delafield
Robert E. Gaylord

G. A. McJimsey
Horace E. Wood

Hostesses

Mrs. Brooks Bell
Mrs. James W. Ford
Mrs. Clare K. Madden
Mrs. Franklin A. Squires
Mrs. Bibb Ballard
Mrs. A. B. Conly
Mrs. W. Harrel Delafield
Mrs. Joe Favors
Mrs. Robert E. Gaylord
Mrs. G. A. McJimsey
Mrs. Julius Tomlin
Mrs. Tom M. Williams
Mrs. Horace E. Wood

MEN'S ENTERTAINMENT

Robert E. Gaylord, Chairman

Bibb Ballard
A. B. Conly
Joe Favors
T. M. Matthews
Julius Tomlin

Tentative speakers at the meeting are as follows:

Spencer R. Atkinson. Early Treatment.

Ernest N. Bach. Incidence of Caries in Orthodontic Patients.

Henry Beyron, Stockholm. Aging Changes in Adult Dentition and the Preservation of Supporting Tissues.

Elena Boder, M.D. Facial Asymmetry in the Newborn Infant; Its Etiology and Orthodontic Significance.

Touro M. Garber. An Up-to-the-moment Review of the Clinical Adaptation of Cephalometry as a Diagnostic Aid.

L. B. Higley. Rational Approaches in Orthodontic Diagnosis.

Andrew F. Jackson. Are Multiple Bands Necessary in Orthodontic Treatment?

Robert E. Moyers' Group, Toronto. Intraoral Factors Affecting Case Assessment.

Shailer Peterson (A.D.A). Undergraduate and Graduate Orthodontic Education.

Note. Dr. Peterson is not quite certain that he can be with us. May have his associate, Dr. Casey, in his place.

H. C. Pollock. Orthodontic Trends.

J. A. Salzmann. General Growth Acceleration and Retardation in Relation to Dentofacial Development.

Arnold E. Stoller. The Normal Position of the Maxillary First Molar.

John R. Thompson. Normal and Abnormal Function of the Temporomandibular Joints.

Clifford L. Whitman. Habits Have Gotten to Be a Habit With Me.

S. Fastlicht, Mexico City. Treatment of Impacted Cuspids.

Symposium: Treatment of a Typical Distoclusion Case.

5 case reports—15 minutes each.

Edgewise Appliance. F. F. Schudy, Houston, Texas.

Universal Appliance. Donald C. MacEwan, Seattle, Wash.

Labio-Lingual Appliance. William H. Oliver, Nashville, Tenn.

Removable Appliance. Samuel D. Gore, New Orleans, La.

Twin-arch Appliance.

A.B.O. Exhibit, showing material submitted to the Board in 1952.

Also Research Session, Tuesday evening.

University of Pennsylvania

The Thomas W. Evans Museum and Dental Institute of the School of Dentistry, University of Pennsylvania, Philadelphia, Pa., will give a postgraduate course on the philosophy and principles of the Universal appliance. The course will be conducted by Spencer R. Atkinson from April 13 to 18, 1953.

A course on the twin wire mechanism will be given by Joseph E. Johnson, April 6 to 10, 1953, at the University of Pennsylvania.

Middle Atlantic Society of Orthodontists

The Middle Atlantic Society of Orthodontists held its annual meeting at the Hotel Traymore, Atlantic City, N. J., on Oct. 19, 20, and 21, 1952.

Unusual and thought-provoking papers by Charles M. Waldo and John H. Sillman and case reports by Z. Bernard Lloyd and S. Lehman Nyce were well received on Monday. Discussions by Nash, Whitman, Anderson, Hopkins, Erikson, Sager, and Stucklen revealed that this formerly popular diversion has not altogether disappeared from the orthodontic scene. It is hoped that fewer formal papers and more informal discussions will characterize this group's programs.

On Tuesday the over seventy members and guests present listened to Sam Gore's exposition of the Crozat Technique and then Andy Jackson added his personal experience. Both informal presentations were amply illustrated. Patton and Jarrett were the discussors.

A business meeting was held in the afternoon. Election of officers resulted as follows:

President	Charles Patton
Vice-President	Raymond Sheridan
Secretary-Treasurer	Gerard A. Devlin
Board of Censors	Andrew Jackson
	William Giblin
	George Anderson
Editor	Stephen C. Hopkins
Director	Emil Rosenast
Alternate	Daniel Shehan
Chairman, Program Committee	Paul V. Reid

Among the guests present were Oren Oliver, Frank Bowyer, Walter Chapin, Bill Weichselbaum, and Bill Jarrett. "Official entertainment" included a reception and dinner on Sunday night and a luncheon on Monday. "Unofficially" the Penn Alumni and the New Jersey boys added a couple of cocktail parties. Many wives attended and seemed to enjoy this entertainment in addition to the attractions of the Boardwalk.

Northeastern Society of Orthodontists

The next meeting of the Northeastern Society of Orthodontists will be held at the Commodore Hotel, New York, N. Y., on Monday and Tuesday, March 9 and 10, 1953.

Pacific Coast Society of Orthodontists

The Northern Section meets the second Tuesday of March, June, September, and December.

The Central Section meets the second Tuesday of March, June, September, and December.

The Southern Section meets the second Friday of March, June, September, and December.

TWENTY-THIRD GENERAL MEETING

The Twenty-third General Meeting of the Pacific Coast Society of Orthodontists will be held at the Palace Hotel, San Francisco, on Monday, Tuesday, and Wednesday, Feb. 23, 24, and 25, 1953.

First the committee is proud to inform you that the program is now complete with an array of informative presentations and highly qualified guest essayists covering every important phase of orthodontics.

And the headliner? At the St. Louis meeting in April, one man, above all others, captured the most attention, interest, and admiration of the entire attendance. He has been prevailed upon to appear as No. 1 clinician in February and present his work. He is none other than Joseph E. Johnson, of Louisville, Ky., master of the twin wire mechanism.

As soon as word got around that he was invited, several members of the Central Section got in touch with Dr. Theodore N. Engdahl, of San Jose, who took Dr. Johnson's course last year, as to the possibility of his presenting a course during his trip to California, and he has consented.

The course is to be limited to 25 and put on the week before the meeting, so that arrangements could be made with Dr. Johnson and that a review of the course could be had during the meeting of the Pacific Coast Society for those who took the course. This attraction will not detract attendance from the meeting.

You will shortly receive the letter containing full details so watch for it carefully if interested as it will be limited to a very small group.

NORTHERN SECTION

The meeting was held October 27, in Vancouver, B.C.; Dr. Robert Ricketts and a "Quiz Kid" round table were included in the program.

CENTRAL SECTION

The quarterly meeting was held at the Alexander Hamilton Hotel Tuesday, Sept. 16, 1952, with Secretary Brownwell absent on vacation. Seymore Gray was appointed to pinch-hit for him.

Program Chairman Ray Curtner introduced the speaker, Mr. Robert C. Harris, who talked on "Tax Dilemmas Confronting the Professional Man." He stressed the need for careful planning regarding estate and gift taxes.

There were 45 members and guests in attendance.

SOUTHERN SECTION

The regular quarterly meeting was held at the Nikabob Restaurant, Sept. 12, 1952, at 2:30 P.M. Chairman Merle D. Davis presided.

Howard M. Lang, Program Chairman, introduced Alton W. Moore, director of the Department of Orthodontics and of Graduate Dental Education at the University of Washington, who spoke on the subject: "Growth Factors and Their Clinical Application in the Diagnosis and Treatment of Malocclusion."

Rocky Mountain Society of Orthodontists

The Annual Fall Meeting of the Rocky Mountain Society of Orthodontists was held at Denver, Colo., Nov. 10 and 11, 1952.

Officers are: Curtis E. Burson, President; Kenneth R. Johnson, Vice-President; Don V. Benkendorf, Secretary-Treasurer.

LECTURE PROGRAM

Monday, Nov. 10, 1952

Dr. R. Paul Husted. Orthodontic Diagnosis and Treatment of Primary and Mixed Dentures.

Mr. Allan S. Richardson. No Man Need Die Poor in a Capitalistic Economy.

Dr. R. Paul Husted. Positioners—Their Uses and Technique for Their Construction.

Tuesday, Nov. 11, 1952

Dr. R. Paul Husted. Clinical Demonstration of Method of Properly Relating Models.

Dr. R. Paul Husted

Dr. Harold E. Rice

Dr. J. Lyndon Carman

Dr. George H. Siersma, Moderator

Dr. R. Paul Husted.—Management of the Younger Patients in an Orthodontic Practice. This will include demonstrations of hypnosis and its application.

Southwestern Society of Orthodontists

The Southwestern Society of Orthodontists tendered a testimonial dinner honoring Dr. T. G. Duckworth, of San Antonio, Texas, and Dr. P. G. Spencer, of Boerne, Texas.

Both men are now retired from the active practice of orthodontics, and both pioneered the specialty in the state of Texas.

The dinner was given at the Gunter Hotel on the evening of Oct. 27, 1952. The speakers were: Guy M. Gillespie, Toastmaster; Dan C. Peavy, President, Southwestern Society of Orthodontists; D. C. McRimmon, President, Texas State Dental Society; Brooks Bell, President, American Association of Orthodontists; Oren A. Oliver, President, Federation Dentaire Internationale.

So often hidden behind an austere manner is the faculty of good leadership and good fellowship. Such a rare combination is Paul Guy Spencer, a founder and leader of orthodontics in the Southwest.

Paul Guy Spencer was born Sept. 3, 1887, on a farm near Richmond, Kan. Following graduation from high school, he successfully passed a civil service examination at the age of 17, and thereafter worked in the railway mail service for over seven years.

PAUL GUY SPENCER

Later he attended Kansas City Dental College (now the University of Kansas City) where he graduated in 1913. He opened his office immediately afterward at Gravette, Ark. His practice was interrupted by World War I, when he volunteered for service. After his honorable discharge as Captain in 1919, he graduated from the Dewey School of Orthodontia. He then located in Waco, where he practiced until his retirement.

In 1920, along with others whose names are now distinguished on our rolls, he helped found and organize the Southwestern Society of Orthodontists, served for nine years as its first Secretary, and became President of the Society in 1931. He was honored in 1937 by being elected President of the American Association of Orthodontists.

He is the author of an excellent reference book, "Prevention of Malocclusion." He is a member of the Psi Omega fraternity and was honored at Baylor University College of Dentistry by being made a member of the Omicron Kappa Upsilon fraternity.

This Society is proud to pay tribute to one of its members who has contributed so much to its organization, its development, and its fine fellowship.

When the annals of orthodontics of the Southwest are written, the name of Thomas Gunter Duckworth will stand out in definite prominence. As one of the founders of the Southwestern Society of Orthodontists and a pioneer in his profession, "Duck," as he is affectionately called, is also known as "The Father of Orthodontics in the Lone Star State," for he was the first orthodontist in Texas.

Thomas Gunter Duckworth was born Jan. 20, 1888, in Siloam Spring, Ark., and, after attending the schools in his community, enrolled at Cherokee National Male Seminary at Talaquah, Okla., where he studied in 1907 and 1908. From there, he went to the Kansas City Dental College where he graduated in 1912. He began his practice of orthodontics in Kansas City, spending one year in the office with Dr. William J. Brady.

THOMAS GUNTER DUCKWORTH

"Duck" then moved from Kansas City to San Antonio where he practiced orthodontics for the next thirty-nine years. In 1920 he became one of the founders of the Southwestern Society of Orthodontists and served as its president in 1924; in 1940 he was the president of the Texas State Dental Society. He is a member of the Psi Omega fraternity and was awarded membership in the Omicron Kappa Upsilon fraternity by Baylor University College of Dentistry.

What he has given by foresight and ability has been brightened by a genial disposition and a generous understanding of his fellow men and his fellow practitioners.

This Society is proud to pay tribute to one of its members who has contributed so much to its organization, its development, and its fine fellowship.

Chicago Association of Orthodontists

The program for the Chicago Association of Orthodontists for the year 1952-1953 has been announced. It follows:

OCT. 27, 1952—MONDAY EVENING

BISMARCK HOTEL—THIRD FLOOR

Occlusal Equilibration and Orthodontic Stability. Clyde H. Schuyler, New York City. Discussor: Silas J. Kloehn, Appleton, Wis.

NOV. 24, 1952—MONDAY EVENING

BISMARCK HOTEL—THIRD FLOOR

Executive Reorganization of Chicago Association of Orthodontists.
CASE REPORTS.—William F. Ford and Robert W. Donovan, Chicago, Ill.

JAN. 26, 1953—MONDAY EVENING

BISMARCK HOTEL—THIRD FLOOR

Class II, Division I Malocclusion. Brainerd F. Swain, Morristown, N. J. Discussor: James C. Toothaker, South Bend, Ind.

MARCH 30, 1953—MONDAY EVENING

THE KUNGSHOLM—100 EAST ONTARIO

Social Evening, Smorgasbord, and Opera—Members and wives, and guests.

APRIL 20, 1953—MONDAY EVENING

BISMARCK HOTEL—THIRD FLOOR

Retention—A Problem of Treatment. Richard A. Riedel, Seattle, Wash. Discussor: Ben L. Herzberg, Chicago, Ill.

Announcement to Future Essayists

At the annual session of the American Association of Orthodontists in Louisville the following recommendations of the Publication and Editorial Board were adopted and are now official:

1. That many valuable articles are lost for publication because they were not prepared for such.
2. Authors expecting to have published, without expense, a profusion of illustrations impose a difficult task upon the editorial staff.
3. That the A.A.O. should adopt official instructions for essayists, including all constituent societies, as to the manner in which their manuscripts should be prepared for publication first and for presentation second.

The contract between the American Association of Orthodontists and The C. V. Mosby Company includes a stipulated sum to be spent for the illustrations of acceptable articles for publication. Any excesses of this budget must be paid out of the treasury of the A.A.O. and may become dangerously expensive.

Accordingly the A.A.O. passed a resolution in 1949 limiting the cost of illustrating any one article appearing in the JOURNAL. In the exercise of these instructions, the Editorial Staff of the JOURNAL has been most lenient and considerate, but the budget must be held within its limit. Excess costs of illustrations may be paid by the authors or other outside sources, if desired.

Avoid delay in the publication of your essay by limiting illustrations.

GEORGE R. MOORE, Secretary-Treasurer, A.A.O.
S. J. KLOEHN, Chairman, Publication and Editorial Board, A.A.O.

Harvard Society of Orthodontists

The Harvard Society of Orthodontists met on Oct. 30, 1952, at Vanderbilt Hall, Harvard Medical School. The essayist of the evening was Herman Livingstone, D.D.S., who spoke on "Treatment of Class II, Division 1 by Means of Headcap on the Maxillary Arch Plus Sectional Arches Made From the Universal Appliance." Twenty-four members and guests from the New England region attended.

Fédération Dentaire Internationale Congress

Twenty-four members of the American Dental Association participated in the International Dental Congress held in London, July 19 to July 26, 1952.

OREN A. OLIVER

It was estimated that approximately 500 dentists from the United States participated in what was generally regarded as the most successful Congress in recent years. A well-known orthodontist of the United States, Dr. Oren A. Oliver, of Nashville, Tenn., was elected to the presidency of the Fédération Dentaire Internationale. Dr. Oliver is a former president of the American Dental Association, and is a member of the Association's Council on International Relations.

University of Maryland Alumni to Meet in March

The largest alumni meeting in the history of the Baltimore College of Dental Surgery, Dental School, University of Maryland, will be held in Baltimore on March 4, 5, and 6, 1953. The program will include scientific sessions, class reunions, inspection of the School's facilities, a variety of entertainment features, and a dinner in honor of Dr. J. Ben Robinson, Dean since 1924, who will retire in April.

The American Academy of Implant Dentures

Saturday, Feb. 7, 1953, is the date of the Dedicatory Meeting of the American Academy of Implant Dentures. This meeting should prove to be a factual and informative implant assemblage.

The question and answer periods should give you an opportunity to obtain the facts and realities of implants. They will uncover complete statistics gleaned from over 300 successful implant cases throughout the world. We want now to acquaint you with the interesting facts which you will hear at 10:00 A.M., Sheraton Hotel, Chicago, Ill., located 505 North Michigan Ave., entrance:

Wm. E. Barb, D.D.S., Indianapolis, Ind., will present his estimation of the "Implant Occlusion."

W. H. Crawford, D.D.S., Dean, School of Dentistry, University of Minnesota, will cite the ideals and future goals of this academy in his "Dedicatory Address."

Aaron Gershkoff, D.D.S., Providence, R. I., will deliver "The Surgical Longevity of Successful Implant Dentures."

Norman Goldberg, D.D.S., Providence, R. I., will deliver "The Prosthetic Longevity of Successful Implant Dentures."

John P. Knowlton, D.D.S., Seattle, Wash., will evaluate how the implant "Masticatory Forces" operate.

Edward Kresse, D.D.S., Denver, Colo., will describe how "Patient Education" is furnished in the implant office.

Marshall W. Mueller, D.D.S., St. Paul, Minn., will afford us an opportunity to hear his conclusions as to the "Implant Editorial."

Wayne Paullus, D.D.S., Miami, Fla., will bring us the extent of "Mucosal Pressures" of the implant denture.

J. T. Gordon, M.D., Lewisburg, Tenn., will point out the "Surgeon's Relationship" to the implant dentist.

Mr. Eric Bausch, Bronx, N. Y., will illustrate how the evolution of the "Technical Developments" of implant dentures occurred.

Mr. William Soller, Hartsdale, N. Y., will accord us an insight into the "Laboratory Problems Relating to Oral Implantations" with his precautions and calculations involved therein.

Extreme interest has already been shown in this meeting; therefore, the Convention Committee requests that the ten dollars reservation fee be mailed to reach the office of the Convention Chairman, Dr. William E. Barb, 668 E. Maple Road, Indianapolis, Ind., no later than midnight, Jan. 15, 1953.

Founding of The American Institute of Dental Medicine

At the Ninth Annual Seminar for the Study and Practice of Dental Medicine held in Palm Springs, Calif., Oct. 26, 1952, the Board of Directors announced the founding of The American Institute of Dental Medicine. This Institute is nonprofit in character and is so incorporated under the laws of the State of California. Its prime purpose is to further postgraduate education in the field of dental medicine. The Annual Seminar will continue as in the past nine years as one of the essential functions of this Institute. In addition its members will be offered a case history each month from the broad field of dental medicine. These histories will be accompanied by original 35 mm. Kodachromes of the oral condition, pertinent laboratory findings, medical background, roentgenograms, histologic slides, photomicrographs, or whatever may be indicated in each individual case. This service will begin January, 1953. Any member of the American Dental Association or American Medical Association and their foreign equivalents is eligible for membership. Further information may be obtained from the Executive Secretary of the Institute, Miss M. Lewis, 2240 Channing Way, Berkeley 4, Calif.

First District Dental Society of the State of New York

The First District Dental Society of the State of New York announces a one-day workshop on "Trends in Public Health and Industrial Dentistry" to be held at the Hotel Statler, New York City, Friday, Jan. 30, 1953.

Morning Panel

OCCUPATIONAL ORAL MEDICINE AND PUBLIC HEALTH

9:00 A.M. TO 12:00 P.M.

LEO STERN, D.D.S., CHAIRMAN

NEAL W. CHILTON, D.D.S., M.P.H., CO-CHAIRMAN

Evolution of Industrial Medicine, Anthony J. Lanza, M.D.

The Orthodontic Problem in Public Health in Relation to Industrial Dentistry—Historical Aspects. J. A. Salzmann, D.D.S.

Oral Surgery and Oral Medicine in Occupational Health. W. A. Harrigan, D.D.S., M.D.

Occupational Medicine, Industrial Dentistry, and Public Health. David H. Goldstein, M.D.

Afternoon Panels

DENTAL CARE IN OCCUPATIONAL-HEALTH PROGRAMS

1:00 TO 3:00 P.M.

WALTER H. WILSON, D.D.S., CHAIRMAN

M. E. MICHAELSON, D.D.S., CO-CHAIRMAN

Preventive and Treatment Programs in Industry. Edward R. Aston, D.D.S.

Oral Dysfunction in Public Health and Occupational Health. Clyde H. Schuyler, D.D.S.

The Public Health Service Dental Program in Occupational Health. F. J. Walters, D.D.S.

Training for Public Health and Industrial Dentistry. Alfred J. Asgis, D.D.S., Ph.D.

THE PRIVATE DENTIST'S ROLE IN PROGRAM PLANNING:

PRACTICAL PROBLEMS AND ISSUES

3:00 TO 5:00 P.M.

OSCAR JACOBSON, D.D.S., CHAIRMAN

JULES B. SELDIN, D.D.S., CO-CHAIRMAN

D. J. KALSK, M.D., AND PANEL SPEAKERS

General discussion will follow at the end of each panel.

Evening Lecture—8:00 P.M.

MEDICAL-DENTAL COOPERATION IN PUBLIC HEALTH AND OCCUPATIONAL HEALTH

HENRY E. MELENEY, M.D.

Discussant: E. M. Bluestone, M.D.

Members of the health professions are cordially invited to attend all sessions. Admission, free. Write for Registration forms to Public Health Workshop, First District Dental Society, Hotel Statler, New York City.

Medical-Dental Cooperation in Public Health and Occupational Health. Abstract by Henry E. Meleney, M.D., Hermann M. Biggs Professor of Preventive Medicine, College of Medicine, New York University

The initiative for some of the features of medical-dental cooperation in public health and occupational health should come from the medical profession, others from the dental profession, and still others from mutual efforts.

Among those to be initiated by the medical profession are the instruction of medical students in the importance of dental health, investigation of dental problems in patients suffering from oral or systemic diseases, encouragement in the correcting of dental defects in children, and the supervision of dental hygiene in industrial medical services.

Among those to be initiated by the dental profession are the training of dental students in dental hygiene and in the relationship of dental and oral lesions to systemic diseases, encouragement of the dental practitioner in the use of preventive measures and in cooperation with public health agencies.

Among the joint cooperative efforts are promotion of fluoridation of water supplies, development of preventive clinics for children and occupational groups, and closer association between dental and medical societies in developing public health programs and the recruiting and training of public health personnel.

The preventive medicine and dentistry of the future must emphasize the promotion of maintenance of optimum health.

Federal Trade Commission

The following letter sent to the members of the American Association of Orthodontists explains itself. Following the letter there is a press release and copy of the "cease and desist" order issued by the Federal Trade Commission of the United States Government.

It is thought by the officers and Ad Interim Committee of the American Association of Orthodontists that this material will be of interest to the dental profession and the members of the Association.—*Ed.*

Dear Fellow member:

The American Association of Orthodontists has, through its counsel Dargusch, Caren, Greek & King, entered into a settlement with the Federal Trade Commission. A press release enclosed herewith is designed to explain the nature and result of that action. Also enclosed is the cease and desist order.

The American Association of Orthodontists through the action of its Board of Directors, at its 1951 meeting in Louisville, Kentucky, has withdrawn from the members, officers or directors any authority to act in its behalf in connection with laboratory advertising. Therefore, individuals will be responsible for their own actions in this regard.

Since the action was directed against the Association, its officers, members and directors each member should understand that the order of the Federal Trade Commission applies to the members as individuals and a violation of the order by individuals will subject the violator to serious penalties for contempt of the Federal Trade Commission.

You will note that by the action of the Board of Directors members are required to channel all complaints pertaining to laboratory advertising through the chairman of the Public Relations Committee who is instructed to forward such complaints, as he deems justifiable, to the Federal Trade Commission. It is felt that through this method no individual will open himself to liability to be held in contempt of the order as issued by the Federal Trade Commission.

AD INTERIM COMMITTEE
Dr. Brooks Bell
Dr. James W. Ford
Dr. Clare Madden
Dr. Franklin A. Squires
Dr. George H. Siersma
Dr. Fred Aldrich
Public Relations Chairman

PRESS RELEASE

The American Association of Orthodontists has entered into a consent settlement with the Federal Trade Commission in which it neither admits nor denies certain allegations contained in a complaint filed against The American Association of Orthodontists, its officers, members and directors by the Federal Trade Commission.

This action was brought about because of the fact that certain members of The American Association of Orthodontists in an effort to protect the best interests of public health wrote letters to publishers of certain dental publications requesting that they delete laboratory advertising which, in the opinion of the writers, was not in the best interest of public health.

The legal effect of the language used in the letters, however, could have been interpreted to be coercive and, therefore, in violation of Fair Trade Laws of the United States. The Federal Trade Commission issued its complaint alleging that these letters were coercive and without admitting or denying the allegations of the Federal Trade Commission The American Association of Orthodontists entered into a consent settlement in which it accepted an order from the Federal Trade Commission which orders The American Association of Orthodontists, its officers, members and directors not to attempt to prevent dental laboratories manufacturing and selling supplies, devices and appliances used by dentists and orthodontists in the practice of orthodontia from advertising in the trade journals.

The Board of Directors of The American Association of Orthodontists at the 1951 meeting passed a resolution which requires the members of The American Association of Orthodontists to channel all complaints pertaining to laboratory advertising through the Chairman of the Public Relations Committee of The American Association of Orthodontists. The Public Relations Chairman has been directed to forward any complaints to the Federal Trade Commission which he deems worthy of their attention, thus the Federal Trade Commission, and not the individual members of The American Association of Orthodontists, is left to determine whether or not certain types of advertising are unfair.

CEASE AND DESIST ORDER

IT IS ORDERED that respondents, The American Association of Orthodontists, a corporation, its officers, directors and members, and T. Wallace Sorrels, directly or indirectly, in or in connection with the offering for sale, sale or distribution in commerce, between and among the several states of the United States, and in the District of Columbia, of supplies, devices and appliances used by dentists in the practice of orthodontia,* do forthwith cease and desist from entering into, cooperating in, carrying out or continuing any combination, agreement, understanding or planned common course of action between any two or more of said respondents, or between any one or more of said respondents and others not parties hereto, to do or perform any of the following acts or things:

(a) Attempting to prevent or preventing those engaged in the manufacture and sale of supplies, devices and appliances, used by dentists and orthodontists in the practice of orthodontia* from having access to media of advertisting serving the dental profession.

(b) Attempting to prevent or preventing dentists from having the benefit of advertising by those engaged in the manufacture and sale of supplies, devices and appliances needed by dentists in the practice of orthodontia.*

*It is generally recognized that the words "orthodontic" and "orthodontia" refer to the regulation of the teeth through the use in the oral cavity of certain supplies, devices and appliances.

(c) Attempting to coerce or coercing and compelling by threats of boycott, acts of intimidation and other means, publishers and editors of trade publications in the dental field, or others, from soliciting or publishing advertisements from those engaged in the manufacture and sale of supplies, devices and appliances used by dentists in the practice of orthodontia.*

(d) Using The American Association of Orthodontists or any successor association, or group, as an instrumentality or medium for carrying on and making effective any of the aforesaid acts and practices.

IT IS FURTHER ORDERED that each of the respondent members of The American Association of Orthodontists and T. Wallace Sorrels do forthwith cease and desist from knowingly contributing to the accomplishment of any of the acts, practices, or things prohibited in paragraphs (a) to (d), inclusive, of this order.

IT IS FURTHER ORDERED that respondents shall, within sixty (60) days after service upon them of this order, file with the Commission a report in writing, setting forth in detail the manner and form in which they have complied with this order.

Notes of Interest

Dr. Donald D. Bergeron announces the opening of his office at 418 Riker Bldg., Pontiac, Mich., practice limited to orthodontics.

Dr. Frank P. Bowyer, Knoxville, Tenn., announces that Dr. Thomas D. Pryse is once again associated with him. For the past two years Dr. Pryse has been in the Air Force assigned to Bolling Field. Dr. Pryse will be associated with Dr. Bowyer in both his Knoxville and Oak Ridge offices.

F. Robert Rampton, D.D.S., M.S., announces the opening of his office for the practice of orthodontics at 1708 Hendricks Ave., Jacksonville, Fla.

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*It is generally recognized that the words "orthodontic" and "orthodontia" refer to the regulation of teeth through the use in the oral cavity of certain supplies, devices and appliances.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS is composed of a representative of each one of the component societies of the American Association of Orthodontists.

American Association of Orthodontists

President, Brooks Bell - - - - - - - - - - 4150 Mockingbird Lane, Dallas, Texas
President-Elect, James W. Ford - - - - - - - - 55 E. Washington St., Chicago, Ill.
Vice-President, Clare Madden - - - - - - - - 22 Lafayette Place, Greenwich, Conn.
Secretary-Treasurer, Franklin A. Squires - - - - - Medical Centre, White Plains, N. Y.

Central Section of the American Association of Orthodontists

President, Paul G. Ludwick - - - - - - - - - - - - Sharp Bldg., Lincoln, Neb.
Secretary-Treasurer, Frederick B. Lehman - - - - - Merchants National Bank Bldg., Cedar Rapids, Iowa

Great Lakes Society of Orthodontists

President, Holly Halderson - - - - - - Medical Arts Bldg., Toronto, Ontario, Canada
Secretary-Treasurer, Carl R. Anderson - - - - 402 Loraine Bldg., Grand Rapids, Mich.

Middle Atlantic Society of Orthodontists

President, Charles Patton - - - - - - - - - - 235 S. 15th St., Philadelphia, Pa.
Secretary-Treasurer, Gerard A. Devlin - - - - - - - - 49 Bleeker St., Newark, N. J.

Northeastern Society of Orthodontists

President, Paul Hoffman - - - - - - - - 1835 Eye St., N. W., Washington, D. C.
Secretary-Treasurer, Oscar Jacobson - - - - - - 35 W. 81st St., New York, N. Y.

Pacific Coast Society of Orthodontists

President, Reuben L. Blake - - - - - - - - 240 Stockton St., San Francisco, Calif.
Secretary-Treasurer, Frederick H. West - - - - 760 Market St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Kenneth R. Johnson - - - - - - 303 N. Weber, Colorado Springs, Colo.
Vice-President, Don V. Benkendorf - - - - - - 932 Metropolitan Bldg., Denver, Colo.
Secretary-Treasurer, Curtis L. Benight - - - - - - 1001 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, Leland T. Daniel - - - - - - - - 407-8 American Bldg., Orlando, Fla.
Secretary-Treasurer, M. D. Edwards - - - - - - 132 Adams Ave., Montgomery, Ala.

Southwestern Society of Orthodontists

President, Dan C. Peavy - - - - - - - - - 745 Milam Bldg., San Antonio, Texas
Secretary-Treasurer, Fred A. Boyd - - - - - - 1502 North Third St., Abilene, Texas

American Board of Orthodontics

President, Leuman M. Waugh - - - - - - - - - 931 Fifth Ave., New York, N. Y.
Vice-President, Raymond L. Webster - - - - - 133 Waterman St., Providence, R. I.
Secretary, C. Edward Martinek - - - - - - - - - 661 Fisher Bldg., Detroit, Mich.
Treasurer, Lowrie J. Porter - - - - - - - - - 41 East 57th St., New York, N. Y.
Director, Ernest L. Johnson - - - - - - - - - 450 Sutter St., San Francisco, Calif.
Director, William E. Flesher - - - - - - - - Medical Arts Bldg., Oklahoma City, Okla.
Director, Max E. Ernst - - - - - - - - Lowry Medical Arts Bldg., St. Paul, Minn.

A List of the Orthodontic Societies of the World and Their Principal Officers*

Chicago Association of Orthodontists

President, Beulah G. Nelson – 715 Lake St., Oak Park, Ill.
President-Elect, Waldo O. Urban – 636 Church St., Evanston, Ill.
Secretary-Treasurer, Leonard Grimson – 636 Church St., Evanston, Ill.

Harvard Society of Orthodontists

President, Lawrence J. Obrey – 29 Commonwealth Ave., Boston, Mass.
Vice-President, Bernard C. Rogell – 6 Pleasant St., Malden, Mass.
Secretary, Ben Wayburn – 67 Coddington St., Quincy, Mass.
Treasurer, Clifford G. Hunt – 14 Muzzey St., Lexington, Mass.

New York Society for the Study of Orthodontics

President, Lawrence Kurland – East 42nd St., New York, N. Y.
Vice-President, Leon M. Gecker – 305 West 72nd St., New York, N. Y.
Secretary, Abraham Mollin – 625 Middleneck Road, Great Neck, Long Island, N. Y.
Treasurer, Irving Lederman – 45-54 41st St., Long Island City, N. Y.

New York University Orthodontic Society

President, Arthur Raeder – 615 E. Parkway, Brooklyn, N. Y.
Vice-President, Adeline S. Guttelman – 209 E. 23rd St., New York, N. Y.
Secretary-Treasurer, Abraham Gralnick – 1 Nevins St., Brooklyn, N. Y.
Librarian, Jerome Teitlebaum – 163 E. 178th St., New York, N. Y.

Philadelphia Society of Orthodontists

President, Augustus L. Wright – 255 S. 17th St., Philadelphia, Pa.
President-Elect, J. M. Jackson – Medical Arts Bldg., Philadelphia, Pa.
Secretary-Treasurer, John W. Flanagan – Medical Arts Bldg., Philadelphia, Pa.
Librarian, Richard Stucklen – 908 Delaware Ave., Wilmington, Del.

St. Louis Society of Orthodontists

President, Earl C. Bean – 120 N. Forsyth, St. Louis, Mo.
Vice-President, Robert E. Hennessy – 8010 Maryland, St. Louis, Mo.
Secretary-Treasurer, Everett W. Bedell – 1504 S. Grand Blvd., St. Louis, Mo.

Orthodontic Club of Toronto

President, Lorne Riddolls – 230 College St., Toronto, Canada
Vice-President, H. E. Leslie – 394 Bloor St., W., Toronto, Canada
Secretary-Treasurer, R. D. Leuty – 317 Rosemary Road, Toronto, Canada

Washington-Baltimore Society of Orthodontists

President, D. Robert Swinehart – Medical Arts Bldg., Baltimore, Md.
Vice-President, Donald H. Glew – 3506 Macomb St., N. W., Washington, D. C.
Secretary-Treasurer, George R. Cadman – 606 Farragut Medical Bldg., 900 17th St., N. W., Washington, D. C.

Foreign Societies

Sociedad Argentina de Ortodoncia

President, Héctor F. Viale – Victoria 1284, Buenos Aires
Vice-President, Ramón Torres – Laprida 1687, Buenos Aires
Secretary, Elio A. De María – Humbertol 2708, Buenos Aires
Treasurer, Jacobo Guidalevich – San Juan 1896, Buenos Aires

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*In the January issue of the AMERICAN JOURNAL OF ORTHODONTICS is published each year a list of the orthodontic societies of the world of which the JOURNAL has any record, along with the names and addresses of their principal officers.

The JOURNAL keeps a file for each of these societies and publishes the names that appear in that file as of the date of going to press.

Australian Society of Orthodontists

President, A. Thornton Taylor – – – – – – – – – – – – 175 Macquarie St., Sydney
Secretary-Treasurer, Robert Y. Norton – – – – – – – – – 175 Macquarie St., Sydney

Sociedad Brasileira de Ortodoncia

President, Joaquim Cavalcanti – – – – – – – Praca G. Vargas 2, S. 422, Rio de Janeiro
Vice-President, Kant Duarte – – – Rua Manuel de Carvalho, 16-9°, S. 91, Rio de Janeiro
Secretary, Virgilio Moozen – – de Oliverira, Av. Rio Branco 311-6°, S. 613, Rio de Janeiro

British Society for the Study of Orthodontics

President, L. Clinch – – – – – – – – – – – – – – – 27, Wimpole St., W.1, London
Hon. Secretary, H. Richards – – – – – – – – – – – – 35, Harley St., W.1, London
Hon. Treasurer, H. Chapman – – – – – – – – – – 6, Upper Wimpole St., W.1, London

Sociedad de Ortodoncia de Chile

President, Arturo Toriello A. – – – – – – – – – – – – Londres No. 63, Santiago
Vice-President, Germán Moreno J. – – – – – – – – – – Phillips No. 56, Santiago
Secretary, Eduardo Manns Sch. – – – – – – – – – – Mac Iver No. 272, Santiago
Treasurer, Pedro Gandulfo G. – – – – – – – – – – – Londres No. 63, Santiago
Librarian, Sergio Silva C. – – – – – – – – – – – – – Moneda No. 1035, Santiago

Sociedad Colombiana de Ortodoncia

President, José Mayoral – – – – – – – – – – – – – Carrera 9, No. 21-68, Bogota
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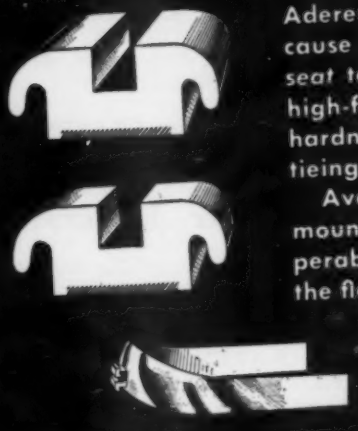

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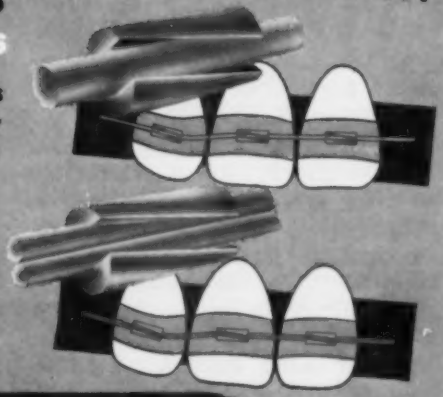

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